THE

UNITED SERVICE.

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FACTS IN FAVOR OF COMPULSORY RETIREMENT.

II.

SINCE the introduction of the Butterworth bill, less than a year ago, a decided change of feeling has taken place among the few officers whose self-interest at first prompted them to oppose it. This has been brought about not so much by argument as by the reflection that favoritism and injustice are inseparably connected with the execution of the present discretionary law.

If we look at its invidious operation during the past eighteen years, it would appear that no administration has ever been able to apply it impartially. Officers over the prescribed limit, however eminent their services, have never for a moment been free from apprehension. They may have professed to be more competent to perform their duty than at any previous period of their lives, but their self-estimate has been accepted or rejected at the pleasure or caprice of their superiors. Some, justly proud of their mental and physical vigor, have been asked to retire, and, failing in that, have been summarily removed. Others, no better qualified, have been kept in active service till in their turn they have been forced to give way to an aspiring subordinate, or, worse still, make room at the bottom of the list for some candidate whose only claim to promotion was based upon political influence. No pledge or promise can protect any officer who comes within the limits of a discretionary law. He may be assured that he will not be retired except on his own application, and the next day be informed that such an application will be favorably received. If he declines to make it; if he scorns the hypocrisy which in the army register would make his

retirement appear voluntary when it was not, the order is issued all the same. He ceases to be an officer on the active list, and goes into retirement with the expressed or implied condemnation of his government.

While for the reasons above stated the army has become almost unanimous in favor of the compulsory principle, it unfortunately cannot be said that the same unanimity exists as to the precise limit. Some would fix it at sixty-two, others at sixty-five, while some who are above that age, if they must have it at all, would defer it till three-score-and-ten.

In settling a question of such vital importance Congress need not confine its investigations to the wholesome effects of a similar law in the navy. Valuable information may be found in civil life, but more particularly in the experience of other nations.

In the English navy retirements for physical and other causes date as far back as 1816. The latest royal warrants, dated in 1870 and 1875, make retirements on account of age compulsory, as follows:

Admirals of the fleet at seventy.

Admirals and vice-admirals at sixty-five, or at any age after ten years have elapsed since their flag was hauled down, or if they have not hoisted their flag ten years after their last service as captain.

Rear-admirals at sixty, or at any age after ten years have elapsed, as above.

Captains at fifty-five, or at any age after seven years have elapsed since they last served.

Commanders at fifty, or at any age if five years have elapsed since they last served.

Lieutenants at forty-five, or at any age if five years have elapsed since they last served.

Besides being liable to retirement at any age on account of physical incapacity, officers are eligible for retirement on their own application at the following ages: admirals and vice-admirals at sixty, rear-admirals at fifty-five, captains at fifty, commanders at forty-five, lieutenants at forty.

Retired vice-admirals are promoted by seniority to the grade of retired admirals, and, generally subject to certain qualifications, any retired officer is permitted to rise by seniority to the retired rank next above. The pay of captains retired between the ages of forty and sixty is graduated from £200 to £600. There is a similar scale for commander and lieutenants. Twenty-five good service pensions of £150 each, awarded "for good and meritorious service at sea," are allowed to the list of one hundred and fifty captains. This pension is retained on retirement, provided the total retired pay does not exceed £600.

Retirement of navigating and civil officers of the navy is as follows: Staff-captains and staff-surgeons, compulsory at sixty, volun-

tary at fifty-five. Paymasters and chaplains, compulsory at sixty, voluntary at fifty-five. Staff-commanders, compulsory at fifty-five, voluntary at fifty. Chief engineers and surgeons, compulsory at fifty-five, voluntary at fifty.

In the marine corps retirement is much the same as in the navy, viz.: Generals of all grades, compulsory at seventy. Colonels commandant, compulsory at sixty-five. Other colonels, compulsory at sixty, voluntary at forty-four. Lieutenant-colonels, compulsory at fifty-four, voluntary at forty-eight. Paymasters, compulsory at fifty-four, voluntary at forty-eight. Captains, compulsory at forty-eight, voluntary at forty-two.

The origin of compulsory retirement, which has been definitely adopted after an experience of more than half a century, is to be found in the successive reductions of the navy during the same period. In 1851, for example, the list of captains by royal warrant was limited to three hundred and fifty. The reduction was effected partly by promotion to the grade of rear-admiral, and by permitting all captains to retire who were above the age of fifty-five, or who had been on the captains' list for ten years. The retired list at the same time was fixed at two hundred, to be gradually diminished to one hundred after the reduction of the active list had been accomplished.

In 1860 all captains were retired who had attained the age of sixty without having served in that rank, and the same principle was made to apply to all such captains in the future. In 1864 the active list was further reduced from three hundred and fifty to three hundred. This reduction was in part effected by extending the retirement of 1860 so as to embrace not only all captains who had not served in their present rank, but also such as were sixty years of age who had served a part but not the full sea-time required to qualify them for promotion to the rank of rear-admiral. The same principle was again applied in 1866, when a third reduction of the captains' list was made to two hundred and fifty; and likewise in the various reductions in the grades above and below. To qualify a lieutenant for promotion to the grade of commander he must have completed four years' sea service; the qualifying service of a commander is two years, captain six years, rear-admiral one year. As the power to employ an officer at sea rests with the government, it will readily be seen that compulsory retirement affords the means of ridding the service of worthless and inefficient officers in every grade. If a dissipated lieutenant is not permitted to qualify for promotion he must go into retirement at forty-five; a commander at fifty, and a captain at fifty-five. The regulation as to sea service is no doubt liable to abuse, but if honestly applied in connection with compulsory retirement, the efficiency of the service cannot fail to be promoted.

The English army being the junior branch of the public service, it was but natural that in the matter of retirement it should have followed

in the footsteps of the navy. In the artillery and engineers, by warrant dated in 1854, officers, after twenty-five years' service, could retire on half-pay, and after thirty years' service, on full pay. In 1872, colonels and generals of the two corps, after forty years' service, were permitted to retire on six hundred pounds a year, subject to certain deductions. This plan of voluntary retirement as a means of quickening promotion proved a total failure.

In the artillery, in a list of nine hundred and forty-five officers, of whom three hundred and seventeen (a number unprecedented) were field and general officers, the number of voluntary retirements on full pay during a period of seventeen years, beginning in 1858, was but thirteen; on £400 a year, but one; and on £600 a year, but forty-eight, —a total of sixty-two, or on the average of three per annum. As a consequence, in a list of seventeen colonels commandant, the senior, in 1875, was eighty-seven years of age, the junior sixty-four; the senior of thirty-eight colonels was fifty-nine, the junior fifty; the senior colonel commandant had been in service seventy-one years, the junior forty-seven.

The indisposition of the senior officers to retire is easily explained. Those who had served twenty-five years naturally would not feel inclined to accept half-pay when, by waiting five years more, they could get full pay. Again, a lieutenant-colonel, after serving thirty years, would not retire on a pension of £400 a year, when by a further service of ten years he would be entitled to £600. But loss of pay is not the sole explanation of the failure of voluntary retirements. Officers in all armies prefer employment to idleness, and beyond this, personal pride forbids them at any time to acknowledge the decline of either their physical or mental faculties.

In the engineers, in 1875, the conditions were about the same as in the artillery. The senior of eighteen generals was seventy-eight, the junior, fifty-two; the senior of twenty-one colonels (there is no colonel commandant) was fifty-eight, the junior, fifty; senior lieutenant-colonel, forty-eight, junior, forty-four; senior major, forty-three, junior major, thirty-seven. With all the superannuation near the head of the list, it will be observed that the lieutenant-colonels and majors had little cause to complain. The junior major had got his promotion, not because of the scheme of voluntary retirement, but because, in the engineers, as in the artillery, the proportion of field to company officers was as one to three, whereas, in the infantry and cavalry,—the great bulk of the army,—this ratio was but one to ten.

Contented as the artillery and engineers had reason to be, the question of compulsory retirement was nevertheless destined soon to attract public attention. Promotion in these two corps had always been by seniority; in the infantry and cavalry it had been by purchase. In the infantry, for example, up to 1871, when the system of purchase

was abolished, a captain who desired to quit the service could sell his commission on the average for £2414, a major for £4689, and a lieutenant-colonel for £6935, or the equivalent in our currency of nearly $35,000. There were no colonels in the organization, that rank being merely honorary. In selling out, the senior officer in the grade next below had the first right of purchase, but if he did not possess the means, the offer went down the list till some one was found able to accept it, who thereby was advanced to the next grade over the heads of all his seniors. Wealth in one's own right or through his friends thus became the chief qualification for promotion. Vicious as was this system, it at least had the merit of raising young men to command. With the full sanction of the government, the officers of the cavalry and infantry had formed their own scheme of retirement. In the guards, if a lieutenant became tired of the service, he knew that at any moment he could sell out for nearly $15,000. In the less favored infantry of the line, as will be seen from the figures before given, a captain could receive for his commission $12,000, a major $23,000, and a lieutenant-colonel or regimental commander, $35,000.

Although purely voluntary, the regulations were so framed as to induce officers to quit the service. The value of a commission depended entirely upon selling it. If an officer were cashiered, died in service, or was killed in battle, he or his family lost the money value of his commission, the vacancy without purchase going to the senior officer in the grade below.

In the navy it has already been shown that at a certain age retirement has been made compulsory in every grade, each officer, of course, being entitled to adequate support.

The purchase system by contrast produced voluntary retirements in each grade, but with this difference, that the officers on quitting the service relinquished all further claim upon the government.

The effect of the system may be established by statistics. In the infantry of the line, during the ten years from 1861 to 1871, the number of officers who sold out was:

Lieutenant-colonels	49
Majors	133
Captains	1051
First and second lieutenants	1623
Total	2856

The total number of officers in the infantry of the line, including depots, was 4758.

It will thus be seen that, exclusive of the usual causes of promotion, viz., death and dismissal, the purchase system alone made in ten years 2856 vacancies in an organization numbering 4758 officers, whereas, in the engineers, numbering 665 officers, voluntary retirements on full

pay during the same period numbered but 21. As the consequence, although the proportion of field to company officers was but one to ten, promotion in the infantry flowed quite as rapidly as in the artillery and engineers. There was no complaint of stagnation. The length of service to attain the different grades was, for a first lieutenant, two years and eight months; captain, nine years; major, eighteen years and eleven months; lieutenant-colonel, twenty-four years and six months.

The average age at date of first commission being taken at twenty, an officer on the average could hope to be a major at thirty-eight, and a regimental commander at forty-four. With the abolition of purchase promotion at once came to a stand-still. A great blow had been struck at favoritism, but it was soon recognized that the efficiency of the service had also received a great shock. Dissatisfaction was expressed by the officers. They saw in future no field for action, and availing themselves of the right of petition, they laid their grievances before the queen. The burden of their complaint was insufficient compensation for their commissions, and slow promotion. Although it was manifest that self-interest had inspired their action, the government, responsible for the efficiency of the army and the national honor, by no means turned a deaf ear. The House of Lords addressed the queen, requesting the appointment of a commission to inquire into the allegations of the officers. In response to their address a commission was appointed in 1873, which, in 1874, reported "that the question of compensation to officers ought not to be dissociated from that of promotion, but that the general question of the means proper to maintain a flow of promotion in the army for the future was not before them."

The power of this commission having been too restricted, a second commission was appointed in 1874, consisting of two members of the House of Lords, one councillor, one civilian, and three major-generals, who were specially directed to report:

"What rapidity of promotion should be considered as having obtained, on the average, in the several arms under the purchase system.

"By what means such rapidity may be best secured in the future with justice to the officers of all ranks in those corps which were under the purchase system.

"And further, in what manner adequate promotion of officers to maintain the efficiency of the whole army in all its combatant branches may most effectively be obtained."

It will be observed from these instructions that the chief object of the commission was to devise a plan of promotion whereby "the efficiency of the whole army in all its combatant branches" might be most effectively maintained. The instructions were explicit. The good of the state, or the greatest good to the greatest number of officers in the army, was alone to be considered. It might be impossible to do justice

to all, but the self-interest of the few must give way to the good of the state and the self-interest of the many.

To this end the means of arriving at a wise conclusion were not overlooked. Full power was granted the commission to call before it such persons as it might deem necessary, and to obtain from them information on every subject coming within the scope of its inquiries. Official books, documents, and papers were likewise placed at its disposal, in order that it might in all matters have the benefit of the fullest information.

The report of this commission, submitted in 1876, nearly two years after it was convened, and numbering, with the testimony and appendices, more than three hundred quarto pages, contains more valuable information bearing on promotion and retirement than is to be found in any other one volume.

In the digest of the evidence of each witness the sub-heads, first appointments, system of promotion, regimental system, service for promotion, rejection, confidential reports, brevet rank, age of officers, five years' rule and retirement, general officers, staff and staff college, reorganization and number of officers, indicate the general plan of inquiry.

In tracing the growth of compulsory retirement in the only foreign army whose organization resembles our own, it will only be necessary to extract from the report of the commission such evidence and facts as bear directly on this particular subject. One of the most important questions addressed to the witnesses was, "With reference to efficiency of the service, what is the highest age at which a man ought to attain to the command of a regiment?"

The Duke of Cambridge, field-marshal, and commander-in-chief, testified: "I think compulsory retirement very distasteful, but at the same time I may say that I think you would find it very difficult to avoid it. . . . It is difficult to put a limit to age, because men are so differently constituted. I think that you want younger commanding officers. The great bulk of the cavalry officers, as a rule, are younger than the commanding officers of the infantry regiments, and I think it is a great advantage."

Referring to the age when a man ought to have a regiment, he stated: "I think he ought to have it at forty,—forty is about the best age. I do not mind if he is thirty-five, as far as I am concerned, but a man at forty is a vigorous man."

To the next question, "If you were constructing a system with a view of getting efficient officers commanding regiments, what should be the limit of age?" he testified:

"I think he ought to be a commanding officer before forty; at forty, as a general rule, a man should have had twenty-one years' service, and that is the right age no doubt. But then there are men at fifty that I have known myself who are quite as active as men

at forty, and therefore I should not like to lay down a hard and fast line. . . . We have a rule now that at sixty a man should retire from the command of his regiment. . . . If a man is not a major after thirty years' service, he ought to go at thirty years' service. We have men who are still captains at thirty years' service, but I think these men ought to go. . . . If you induce a man to go at twenty-five years' service I should not object to it at all; but I think it must be made worth his while. I think it would be very hard to make a man go after twenty-five years' service, unless he could obtain some advantage in going. . . . The whole army is becoming too old for their respective grades. Retirement ought to be offered to men before they are so long in the service as twenty-five years. It ought to go much lower down."

It may add to the value of the above testimony to state what ought to be understood without being said, that the only possible interest the commander-in-chief could have in regimental retirement was the highest efficiency of the service, and the same remark may be applied to the motives of all the general officers summoned before the commission.

The next witness, General Sir Richard Airey, adjutant-general, stated:

"In compulsory retirement an officer ought to retire on his full pay and allowances, viz., lodgings, fuel, lights, and soldier servant. . . . I do not think that any man ought to get the rank of major who was fifty years old. . . . A man might certainly be allowed to get command of a regiment at forty-five." . . .

With regard to a captain: "After twenty years' service in the whole, if he is not about to be promoted, he ought to retire."

Lieutenant-General Sir Charles Ellice was opposed to compulsory retirement unless absolutely necessary.

When asked if he attached any importance to a system of promotion whereby a man would arrive at the rank of a field-officer at a "tolerably early age," he replied: "Certainly it is always better to have them young."

As to the average age of field-officers and regimental commanders, he said: "It is a very difficult question to answer, because one man is more efficient when he is sixty than another man is at forty."

As to a captain: "I should limit him to thirty years, when he must retire at once, if he is not promoted."

Lieutenant-General Sir Alfred Horsford, military secretary, preferred voluntary retirements.

As to age, he stated: "One man may be perfectly fitted for service at sixty, whilst another is perfectly worn out at fifty, and very often earlier."

As to the command of a regiment, a man "ought to be fit at thirty, and might also be still fit at fifty."

As to when it would be desirable for a man to enter upon regimental command, he said: "I would rather not go beyond fifty."

Major-General Armstrong, deputy adjutant-general, did not like to make retirement compulsory.

As to "the most desirable age at which, for the benefit of the service, a man should succeed to the command of a regiment," he stated: "In some cases you cannot go by age, but from thirty-five to forty, on the average, is a very good age to accede to the command. I think that period is the best time of a man's life for command. . . . A man ought not be promoted to the rank of regimental major after thirty years' service, except with a view to his immediately retiring. A man should not be promoted to lieutenant-colonel except, perhaps, with the view of retiring immediately after he has attained the age of sixty."

Lieutenant-General Sir Lintorn Simmons, as a means of increasing promotion was in favor of compulsory retirement. He said:

"I conceive that a man cannot do his duty properly if he has not got the physical power to do it. As a man gets up in the service he has more luxuries around him, and he is not called upon to endure the same physical fatigues as when in a lower rank; he nurses himself a little, so that he is able to go on longer with good results. It is upon this principle that generals may be older than colonels, colonels than lieutenant-colonels, lieutenant-colonels than majors, and majors than captains."

As to the time for holding regimental command: "I put the extreme age at fifty. . . . I think it is a very fair age to take, that a man should not command a regiment after fifty."

In explanation of this and the preceding testimony it should be stated that, although an officer may be considered by age as disqualified for regimental command, he does not thereby have to retire from the service. On the contrary, pursuant to the theory advanced by General Sir Lintorn Simmons, he goes on by seniority to the grade of general officer, and is deemed qualified for a general's command long after he loses his efficiency as a colonel.

In reference to quickening promotion, General Simmons stated: "I think you must adopt some system of removing men from the higher ranks in order to get a flow of promotion. . . . A wiser rule would be to make men leave the service by age. . . . I would place all generals and lieutenant-generals on the non-effective list at the age of sixty-five, or at any age, if a man had not had an active command for ten years. A major-general at sixty, or if he had not had an active command for ten years. A colonel at fifty-five, or if he had not had an active command for seven years. A lieutenant-colonel at fifty, and major at forty-five, and either at any age, if he had not had an active command for five years. . . . I would make forty-two the compulsory age for the retirement of a captain."

Lord Sandhurst, commanding the forces in Ireland, followed much in the same vein. He said: "I am myself very much in favor of a system of compulsory retirement with regard to the respective ages of the officers in the different grades. . . . In time of peace a man is a very good commanding officer up to fifty-five years of age. In time of war, if a man has got all his wits about him, and has made use of his first ten years of army service, he is much better at twenty-eight than he is at fifty-five for such a purpose. But perhaps I should say that a man is never so fit for the command of a regiment, as far as years are concerned, as between the ages of thirty-five and forty-five." . . .

In continuance of the subject he appealed to the personal experience of the members of the commission, adding: "I think every military man in this room will agree that a man who has passed the age of fifty-five, and who has been from twenty-five to thirty years on tropical service, as most of us who have reached the age of fifty-five, is very seldom fit to perform the active duties of his profession in the field. That is the criterion I would take of their fitness to remain in the rank, viz., their ability to perform active duty in the field; and, therefore, I think the age of retirement for a lieutenant-colonel should be fifty-five, the age of retirement for a major should be fifty, and for a captain, forty-five."

As for promotion to the rank of general officer, he said: "I think that a colonel who has passed the age of sixty should not be promoted on the active list, but exceptions might be made in the case of very active and distinguished men."

Lieutenant-General Hodgson likewise favored compulsory retirement on full pay after twenty-five or thirty years' service. He thought forty-five years of age was quite old enough for an officer on first attaining regimental command, and stated: "For the sake of efficiency I do not think he ought to be kept there after fifty-five. . . . I consider that a lieutenant-colonel should not be kept at the head of a regiment after fifty-five years of age, or a major after forty-five, and a captain should certainly be retired at forty."

His scale of compulsory retirement was, for lieutenant-generals, sixty-five; major-generals, sixty; lieutenant-colonels or regimental commanders, fifty-five; majors, fifty; captains, forty.

Brigadier-General Sir John Adye, Director of Artillery and Stores, War Office, and afterwards Commandant of the Military Academy at Woolwich, stated: "It is quite undoubted that you must have compulsory retirement at the top. Age, coupled with non-employment, should lead to compulsory retirement.

"I think officers in command of a regiment, or field-officers of a regiment, should be men in the prime of life. . . . I think that a man is fit to command a regiment any time after thirty if he can only get it; but he should not hold it after fifty-five.

"A lieutenant-colonel at fifty-five years of age should no longer remain in command of a regiment, but should be eligible for the staff or a brigade depot. An officer to command a regiment must be physically fit to endure exposure and therefore comparatively young.

"Majors should be ineligible for promotion after fifty years of age. They should have optional retirement after thirty years' service on full pay, and they should be compulsorily retired at fifty-three on full pay. Captains to be ineligible for promotion after forty-seven; they may retire after twenty-five years' service, . . . and must retire at fifty."

General Lord Strathnairn favored voluntary retirement. As to the age of regimental commanders, he stated: "I should say that an officer cannot be quite fit to command a regiment at twenty-five, but I should say that seven or eight years' service ought to qualify an officer for a command of a regiment if he is an able and talented officer."

After twenty years' service, he added:

"I should not go beyond that, because an officer of much capacity gets tired of the routine of the barrack-yard and the regiment, and becomes slack about it."

The foregoing extracts have been taken from the testimony of ten of the twelve general officers called before the commission. Of the other two, one was in favor of voluntary retirement, the other was questioned solely in relation to the army of Germany.

The testimony of colonels and other subordinate officers has not been quoted because, although in favor of compulsory retirement, it might be discredited on the ground of self-interest. Besides the testimony of officers, the commission had the benefit of the assistance of experts. Actuaries were employed to compute the rate of promotion under different conditions, and also the cost to the government of the various plans of retirement.

In making its report the commission, pursuant to its instructions, first determined what was the rate of promotion under the system of purchase, which for the infantry has been given for the grade of first lieutenant, two years and eight months; captain, nine years; major, eighteen years and eleven months; lieutenant-colonel, twenty-three years and six months.

It next deduced for the infantry the probable rate of promotion without purchase, as follows: captain, sixteen years; major, twenty-eight years; lieutenant-colonel, thirty-three years.

These figures very nearly accord with the rate of promotion in our own infantry between the years 1838 and 1861, when as yet we had no plan of retirement. As shown in a previous article, the number of years' service before obtaining the grade of major was twenty-four, lieutenant-colonel twenty-nine, and colonel or regimental commander thirty-five. The number of officers per regiment in each service was the same, viz., field-officers three, company officers thirty.

As one means of increasing promotion a royal warrant was issued in October of 1871, three months after the abolition of purchase, which prescribed that thereafter every appointment to a lieutenant-colonelcy or to a majority should be vacated every five years. The commission found that this expedient would give promotion to but two captains and two lieutenants every five years. In view, therefore, of the probable rate of promotion which it had deduced, it reported as one of its most important conclusions:

"1. That promotion in future cannot be sustained without retirement being effected in the lower ranks.

"2. That these retirements must in some form be brought about, or accompanied by a pension or sum of money."

After showing that rapid promotion under the purchase system had been due to selling out or retirements in all grades; that in the interest of the state retirements in the lower grades would be economical, and that voluntary retirements would be insufficient, the commission stated:

"We turn, therefore, to the question of compulsory retirement, not necessarily from the army but from the regiment. . . . We think, and the opinion is shared by most of the military authorities whom we have consulted, that it would be well if the method of compulsion could be dispensed with; and, as we shall presently show, we do not therefore propose to adopt it except as the complement of other measures, and a last resort when voluntary retirement fails."

To the means already provided for vacating the commissions of lieutenant-colonels and majors every five years, the commission added:

"We propose to go a step further, and to provide that the commissions of lieutenant and captain shall only be granted for a period not together exceeding in the whole twenty years, and that at the end of that period the officer, if he has not attained promotion, shall be retired *from the regiment.* This provision, if adopted, will deal with the obstacles that stand in the way of promotion at the very point where they are chiefly felt, namely, in passing from the rank of captain to that of major, and it is on this provision that we mainly place reliance for effecting the object in view."

With the testimony of the general officers before it, as also the full knowledge of the system of retirement in all grades in the navy and formerly in the army by purchase, the recommendations of the commission may almost be anticipated.

The first was that for all officers entering the army after November, 1871, regimental service in the rank of subaltern or captain, or in either, should in the whole be limited to twenty years.

The second, that after service of eight years and to nineteen inclusive, officers (captains and lieutenants) be allowed to *retire from the army* with a "lump sum," graduated from £745 to £2357,—the latter being equivalent to about $12,000, or an annual pension of £176.

The sum of $12,000 cash in hand as an inducement to quit the service may at first sight appear very large, but in reality it is far from it.

Every government recognizes the principle that the men who enter its service as second lieutenants may rise to the command of armies, and be intrusted with the liberty and destiny of their country. With such possibilities before them, they ought at least to have the ability of the average business or professional man, who, devoting all of his time and talent to amassing the means of future support, would feel his life wellnigh a failure if after a struggle of nineteen years he had not accumulated over and above his daily expenses the paltry sum of $12,000.

The third recommendation was, that captains on completing not less than fifteen and not more than twenty years' service should be entitled to retire permanently from their regiments on half-pay, subject, however, if called upon, to serve in the auxiliary forces up to the age of forty-five, with, at the end of that time, if so employed, a step in honorary rank.

The fourth presented compulsory retirement in the form of one of two alternatives. The first, that if a captain after the expiration of twenty years' service was not promoted, he should be *retired from the army* with a pension of £200 a year, and if breveted for distinguished service in the field, with the addition of half his brevet pay. The second, that he should be *retired from his regiment* with half-pay and the chance of employment other than regimental. In the latter case, he should at any time be permitted to retire from the army on £200 a year, and a step of honorary rank.

The fifth recommendation was, that a major be allowed to *retire from the army* before completing twenty-three years' service, receiving as an inducement the same lump sum as provided above for captains.

The sixth, that after completing twenty-three years' service, a major should be permitted to *retire from the army* with a pension of £250 a year.

The seventh provided for compulsory retirement, but allowed a choice of one of two alternatives. First, after seven years' service as a major, and not less than twenty-seven years' total service, a major, if not promoted, should *retire from the army* with a pension of £300 a year, and a step of honorary rank. Second, that he should *retire from the regiment* with a step of unattached promotion, and the chance of employment other than regimental, the half-pay of a lieutenant-colonel when unemployed being £200.

Eighth, that lieutenant-colonels under twenty-seven years' service be permitted to *retire from the army* on £250 a year, the same as majors. The further retirements proposed for lieutenant-colonels were also voluntary. They were to be permitted within five years after the date of their promotion to their present rank, but not under twenty-seven years service, a choice of three alternatives. First, *retirement from the army*

with a pension of £300 a year, and a step in honorary rank. Second, retirement from the regiment on half-pay, subject to employment other than regimental. Third, after thirty years' service, *retirement from the army* with a pension of £365 a year, and a step of honorary rank. The pension to carry with it the right to a widow's pension.

Brevet-colonels who had completed five years' service as lieutenant-colonels with their regiments were required to accept either *retirement from the army* on £420 a year and the honorary rank of major-general, to date from the time it would have been given to them had they remained in service; or *retirement from the regiment* with half-pay and the chances of staff employment, and, what was more important still, succession to the establishment of general officers.

None of the foregoing recommendations, nor, in fact, any made by the commission, were intended to apply to paymasters, quartermasters, or to any non-combatant officers.

The recommendations from ten to twenty-seven referred to officers who had attained their present rank before the abolition of purchase. They were naturally more tender and considerate of personal interests than in the cases already provided for; but it will not be necessary to enter into the complications which surround the retirement of this class, inasmuch as with time the officers belonging to it will gradually disappear.

So far in its recommendations the commission had looked chiefly to the interest of the state. It was required to provide for a flow of promotion in the combatant branches of the army, and had done so by recommending if officers would not go out voluntarily, then retirement should be compulsory, for captains at twenty and majors at twenty-seven years' service. For lieutenant-colonels it was not necessary to prescribe compulsory retirement, as that was already accomplished by the five-years' rule, which required them to vacate their regimental commissions after commanding their regiments for five years. Regimental promotion was thus provided for in all grades, but the grade of general officer, embracing generals, lieutenant-generals, and major-generals, had not yet been approached.

This list in the past had been filled entirely by seniority, without regard either to physical or mental acquirements. The lieutenant-colonel who had commanded his regiment for five years retired from it as a brevet colonel, passed into the list of half-pay officers, and there remained till by seniority he succeeded to a vacancy in the establishment of major-generals. When thus promoted he was again given employment or remained idle, at the option of the government.

As the result of the system of passing from lieutenant-colonels to the half-pay list, the commission found that in future officers on the average would only reach the grade of major-general at sixty-four. Confronted by this fact, but not prepared to advocate promotion to the

grades of general by selection instead of seniority, the commission showed itself for the first time inconsistent. In war, however, no foreign nation will ever complain of its action. It recommended compulsory retirement for generals, but for none of them, strange to say, till they had reached the age of seventy.

Whether or not this inconsistency was due to the fact that as major-generals three members of the commission were dealing with their own grade cannot be definitely stated, but that their judgment was at fault may be inferred from the arguments advanced for making captains retire after twenty and majors after twenty-seven years' service. Referring to these limits for regimental officers, the report subsequently stated: "These periods are, it will be observed, maximum periods, and will give to the country a security that the higher posts in the army shall not be attained except at a time of life when full physical as well as mental vigor may be expected. We lay great stress on this point. We consider efficiency to be paramount to all other considerations and objects, and we have founded our conclusions in this matter on the valuable military opinions, which will be found in the minutes of evidence."

Although the government was not precipitate in its action, the result proved that the commission did not spend its time and labor in vain.

May 1, 1878, nearly two years after the commission submitted its report, a royal warrant was issued containing the following provisions, viz.:

Captains of infantry and cavalry whose commissions date on or subsequent to November 1, 1871, are ineligible for promotion to a majority after twenty years' service, the rule to take effect from and after January 1, 1881.

The same rule applies to captains of artillery and engineers whose rank dates from or after October 1, 1877, but is not to take effect till January 1, 1887.

A major of cavalry or infantry, promoted to that rank on or after November 1, 1871, whose total service is twenty-seven years, and who has held the substantive (*i.e.*, regimental) rank of major for seven years, is made ineligible to the regimental rank of lieutenant-colonel. The same rule applies to majors of artillery and engineers whose rank dates on or after October 1, 1877. For lieutenant-colonels of infantry and cavalry no limit of ineligibility is assigned, because under a previous warrant they have to lay down their regimental rank and command after five years' service. On completing the said service they become colonels by brevet, with eligibility, limited again by age, to the further rank of major-general. Lieutenant-colonels of artillery and engineers, whose rank dates on or after October 1, 1877, on completing five years of substantive or regimental service, are to be removed and placed on

the half-pay list, provided that before that time they do not accept voluntary retirement. Colonels of artillery and engineers of the above date of appointment, on completing five years' service in their rank, are to be placed on the unemployed full-pay list.

The principle of compulsory retirement having been announced for all regimental officers above the rank of lieutenant, it will be seen that there is but one means of avoiding it, and that is by voluntary application.

Pursuant to the recommendations of the commission, retirements from the *army* with a gratuity were granted, but were modified by the warrant of March 1, 1880, so that any lieutenant, captain, or major can retire with a gratuity as follows: after twelve years' service, £1200; after fifteen years' service, £1600; after eighteen years' service, £2000.

These grants, the highest of which is nearly $10,000, are not thrown away. The government acts on the principle before stated that an officer in devoting the twenty best years of his life to its service deprives himself of the opportunities accorded to every other citizen to accumulate the means of future support, and that as a matter of humanity and justice it ought to make him some compensation. He possesses, too, this further claim on its consideration, that the professional knowledge which he has acquired in the military service finds no demand, but is rather a drawback to him, in private life. But beyond these considerations the government is not blind to its own interests. It recognizes in time of war the priceless value of military training, and, therefore, the gratuity for voluntary retirement is offered and accepted with the condition that "in case of national emergency" the officer shall, if a lieutenant or captain, when called upon, be liable to serve in the regular or auxiliary forces (militia and national volunteers) up to the age of forty-five.

By the same warrant of March 1, 1880, voluntary retirements were also graduated by age. After twenty years' service a lieutenant or captain is allowed a yearly pension as follows: at thirty-eight, £170; at thirty-nine, £185; at forty, £200.

A major, after twenty-three years' service, can retire at forty-one with £215; forty-two with £230; forty-three with £250.

After twenty-seven years' service, or seven years in regimental rank, a major can retire at forty-five with £260 a year; at forty-six with £280 a year; at forty-seven with £300.

A lieutenant-colonel, at any time after twelve years' service, can retire on £250 a year.

After thirty years' service he can retire as follows: at forty-eight, with £320 a year; at forty-nine, with £340 a year; at fifty, with £365 a year.

A brevet colonel removed from a regiment after five years' service as a lieutenant-colonel can retire at forty-eight with £515 a year; at fifty-nine with £550; and at sixty with £600.

As in the cases of captains and lieutenants, the government does not relinquish its right to the professional acquirements of these officers. Majors, lieutenant-colonels, and colonels, in case of national emergencies, if called upon, are liable to service in the regular or auxiliary forces up to the age of fifty-five.

Any officer retiring voluntarily after twenty years' service is entitled to a step of honorary rank, but no officer is entitled to retire voluntarily except with the approval of the commander-in-chief and the Secretary of State.

The option of voluntary retirement having been offered to all regimental officers, if they fail to apply for it, a lieutenant, after twenty years' service, is placed on half-pay. The same limit and terms apply to a captain, provided he has served seven years in his grade. If not, he is retired as soon as he completes this period. A major of infantry, cavalry, artillery, and engineers, after twenty-seven years' service, or on completing seven years' service in that rank, is retired on the half-pay of a lieutenant-colonel. A lieutenant-colonel of infantry, cavalry, artillery, and engineers, after completing five years' service in that rank, is also retired on half-pay.

Above the rank of colonel retirements on account of age are made compulsory for general officers of all grades at seventy.

In tracing the principle of retirement in the English army it has not been considered necessary to perplex the reader with the annuities, over-regulation value of commissions, and other conditions attached to the retirement of officers of the guards as also those in the line whose commissions were obtained before the abolition of purchase. It is sufficient to establish the fact that voluntary retirement is authorized and encouraged as the only escape from compulsory retirement, and that service under twenty years of age not being considered, retirement in the various grades must be compulsory on attaining the following ages: lieutenant and captain, forty; major, forty-seven; lieutenant-colonel or regimental commander, fifty-two; general officers, seventy. These ages, it will be remembered, were adopted as a means of securing "adequate promotion," with the ultimate object of maintaining "the efficiency of the whole army in all of its combatant branches."

The subsequent action of the government shows that reforms, like revolutions, never go backwards.

In the navy compulsory retirement, which began with the combatant officers, was next applied to the staff and non-combatant officers, and the present year, according to the public prints, has been extended to all the civil employés in the Admiralty or Navy Department.

The civil officer or clerk who entered the service at or before twenty years of age and has completed forty years' service for pension must retire at sixty. If he has not completed his forty years' service, the Admiralty Board reserves the right to retire him at any time after sixty

years of age, but "in every case" his retirement must be compulsory at sixty-five. In the army the question of compulsory retirement was not seriously discussed till the abolition of purchase in 1871; in 1878 it was definitely adopted for the combatant officers, and in March of the present year it has been extended to the Commissariat and Transport Department, and also the Ordnance Store Department.

In both retirement is voluntary after thirty years' service, and compulsory as follows: major-general (commissary-general) at sixty, or after having completed five years' service in that grade, provided, however, that he shall not be retired until he shall have completed three years in that grade; colonel (deputy commissary-general) at sixty, or after the completion of seven years in the grade; lieutenant-colonels and majors (assistant commissary-generals) at fifty-five, or after completing fifteen years' service; captains (deputy assistant commissary-generals) after January, 1887, at forty-two years of age.

From the experience of the English army alone it would be hazardous to deduce any rule of compulsory retirement; but if we take the British army and navy in connection with the navy of the United States,—the general rule of promotion in all three being the same,—we may safely lay down as a principle of military and naval organization that whenever promotion is by seniority the efficiency of the service demands that retirement shall be compulsory.

The compulsory rule is no stranger to our statutes. For sixteen years it has been applied in the navy, to the satisfaction of the officers and the good of the state. The question now before Congress and the military service is,—Shall we have it for the army?

E. Upton.

THE MARINER'S COMPASS.

"Instructed ships shall sail to quick commerce,
By which remotest regions are allied;
Which makes one city of the universe,
Where some may gain and all may be supplied."

DRYDEN.

FROM the discovery of this simple, most delicate and beautiful, and yet most wonderful of instruments devised or constructed by man, and its adaptation to the purposes of navigation, the widely-extended commerce of the globe may be said to have arisen.

Says Mr. Walker, "The introduction of the mariner's compass, even in its primitive and rude estate, brought about a complete revolution in the theory and practice of naval architecture and seamanship. It extended our geographical knowledge, opened a social and commercial intercourse between different nations of the earth. By it countries previously unknown to Europeans were discovered and colonized, and the ends of the earth actually joined together by circumnavigation."[1]

An extraordinary impulse was undoubtedly given to navigation by the invention of the mariner's compass:

"Then man no longer plied the timid oar
And failing heart along the windward shore.
Broad to the sky he turned his fearless sail,
Defied the adverse, woo'd the favoring gale;
Bared to the storm his adamantine breast,
Or soft on Ocean's lap lay down to rest;
While free as clouds the liquid ether sweep
His white-wing'd vessels coursed th' unbounded deep.
From clime to clime the wanderer loved to roam,
The waves his heritage, the world his home."

A minute bar of steel, poised upon a pivot, is endued with such magical qualities that it becomes animated like a thing of life. Self-moving from some unseen power only known to exist from its effect, and sensitive and tremulous as from an excess of power to perform its destined and miraculous functions, it seems instinct with the spirit and volition of divinity.

[1] The Mariner's Compass, by W. Walker, R.N. In the Nautical Magazine, 1843.

Silent, vigilant, and unceasing, it takes its omnipotent direction towards one definite point in the heavens, which thence becomes a universal centre, an exact and established position for the verification and measurement of the infinitely various lines which may be traced by man upon the surface of the globe, or to denote the complicated movements of the stars.

If the Almighty deigned to direct the route of the Israelites across the desert by a cloud during the day and a pillar of fire during the night, how infinitely more grand and beneficent was His revelation of the magnetic needle, which was destined to and has become the universal guide of the whole human race, on the land as well as on the sea, through all succeeding generations!

Like many other important discoveries, the prime origin of the mariner's compass is involved in much obscurity. Some insist that the attractive virtue of the magnet, which is mentioned by Plato, Aristotle, and Pliny, could not be known to the ancients and they remain ignorant of its *polarity*. It has been even conceived that this property of the magnet is plainly mentioned in one of the oldest books of the Bible, the book of Job, under the name of *topetz*, or the *stone that turns*, and it has been considered impracticable for Solomon to have sent ships to Ophir, Tarshish, etc., without this important instrument. It is certain, however, that the Romans who conquered Judea were ignorant of the polarity of the needle, as it is very improbable they would, with all their shrewdness, have forgotten or lost knowledge of it had it once been communicated to them.

From the days of Homer to the time of the Crusades, in the twelfth century, there are good grounds for believing that the magnet was not in any way applied to purposes of navigation in Europe.

To Flavio Gioia, otherwise called Flavio of Amalfi, or Rositano, a Neapolitan nobleman, is usually ascribed the credit of its modern invention, about the year 1302, and its introduction into Europe. Others think that Marco Polo, the Venetian, who traveled into China about 1260, brought this invention back with him,—a supposition seemingly confirmed by the manner in which the compass was first used in Italy, precisely as by the Chinese, who allow it to float in a small basin of water, kept buoyant with a piece of cork.

Marco Polo whilst in the service of Koublai Khan obtained the command of a Chinese fleet of fourteen ships, each ship having *four masts and nine sails*. This fleet was prepared to carry a Chinese princess to the Persian Gulf. Some of these junks had crews of two hundred and fifty men. It is extremely probable that the compass was in common use in the fleet referred to, though there is no mention of it in Polo's narrative.

The compass of the modern Chinese is probably nearly similar to those used two thousand years ago.

The Chinese divide their compass into twenty-four instead of thirty-two parts, and count from the south, or negative pole, instead of from the north point. They affirm, moreover, that it was known to their emperor Chininquis eleven hundred and twenty years before the Christian era.

The loadstone was styled by the Greeks "Magnes" and Lapis Heraclius; also Lapis Lydius, from its being discovered near Heraclia and Magnesia, cities of Lydia. In this way is derived its modern name, magnet.

It is extremely probable that Europe owes the knowledge of the northern and southern directing powers of the magnetic needle—the use of the mariner's compass—to the Arabs, and that these people were in turn indebted for it to the Chinese. In a Chinese work, the writer of which lived in the earlier half of the second century before our era, there is an allusion to the "magnetic cars" which the emperor Tschingwang, of the ancient dynasty of the Tscheu, had given, more than nine hundred years earlier, to the ambassadors for Tunkin and Cochin China, that they might not miss their way on their return home.

Du Halde, who was a missionary in China, and wrote a history of China from data procured from Chinese books, states that "about the year 2634 B.C., or four thousand five hundred and fourteen years ago, the Emperor Hoang-te, being at war, an instrument was invented, which being placed in a car, *it pointed to the south* and enabled the imperial army to direct its march and surprise the enemy during a thick fog." The same author informs us that two thousand nine hundred and eighteen years ago, or 1038 B.C., an embassy reached China from Cochin; that the ambassadors had experienced great difficulty in finding their way to the imperial court; but on taking their final audience, Tcheore-Kong gave them an instrument, of which one end pointed to the north the other to the south, that they might find their way home with less embarrassment than they had experienced on their route to his dominions. The instrument was then called *Tchi-nan*, and this is the name which the Chinese now give to the mariner's compass.

In the third century of our era, under the dynasty of Han, there is a description given in Huitschins's Dictionary of the manner in which the property of pointing with one end towards the south may be imparted to an iron rod by a series of methodical blows. Owing to the ordinary southern direction of navigation at that period, the south pointing of the magnet is always the one especially mentioned.

This dictionary, compiled about the fourth century, has the following remarkable passages: "They had ships which directed their course to the south by the magnetized needle." "The fortune-tellers rub the points of a needle with the *stone of love*, for rendering it proper to indicate the south."

A century later, under the dynasty of Tsin, Chinese ships employed

the magnet to guide their course safely across the open sea; and it was by means of these vessels the knowledge of the compass was carried to India, and from thence to the eastern coast of Africa. The Arabic designations *Zohron* and *Aphron* (south and north), which Vincenzius, of Beauvais, gives in his "Mirror of Nature" to the two ends of the magnetic needle, indicate, like many Arabic names of stars which we still employ, the channel and the people from whom the Western people received their knowledge.

In the Royal Library of Paris there is an Arabian MS., written in 1242, by Bailac Kipdjatie, which describes the sea-compass of that period as follows: "We have to notice among the properties of the magnet, that the captains who navigate the Syrian seas, when the night is so dark as to conceal from view the stars which might direct their course according to the position of the four cardinal points, take a basinful of water, which they shelter from the wind by placing it in the interior of the vessel; they then drive a needle into a wooden peg or a cornstalk, so as to form the shape of a cross, and throw it into the basin of water prepared for the purpose, on the surface of which it floats. They afterwards take a *loadstone* of sufficient size to fill the palm of the hand, or even smaller, bring it to the surface of the water, give their hands a rotary motion towards the right, so that the needle turns on the water's surface; they next suddenly and quickly withdraw their hands, when the two points of the needle face the *north* and *south*. They have given me ocular demonstration of this process during our sea-voyage from Syria to Alexandria in the year 640 (1242 A.D.)."[2]

The manner of communicating magnetism to a needle made to float on the water, "so as to form the shape of a cross," as described by the Arab, is worthy of notice. There is magic as well as superstition in it.

Raymond Tully, of Majorca, an ingenious and eccentric man, himself a skillful mariner, in a nautical treatise, entitled "Fenix de las Maravillas del Orbe," written in 1286, has furnished proof that it was not then unknown to him. He remarks that the seamen of his time employed "instruments of measurement, sea-charts, and the *magnetic* needle."

In Christian Europe the first mention of the use of the magnetic needle occurs in a politico-satirical poem, called "La Bibia," by Guyot, or Guiot, of Provence, written in 1190, full one hundred and twelve years before the time of Amalfi, the Neapolitan.

This interesting poem is contained in a curious quarto MS. of the thirteenth century, on vellum, belonging to the Royal Library at Paris. The author, Guiot de Provence, was at the court of the Emperor Frederic Barbarossa (as mentioned in the poem itself), held at Mentz in the year 1181, when the emperor's two sons were knighted.

The following is a verbatim copy of the poem:

[2] Letter of M. Humboldt, translated by Klaproth.

GUIOT'S DESCRIPTION OF THE "MARINETTE," OR MARINER'S STONE.

"Icelle estoile ne se muet
Une arts font qui mentir ne puet
Par la vertu de la Manete
Une piere laide et brunete
Ou il fers volenters se joint
Ont regardent lor droit point
Puez c'une aguile lont touchie
Et en un festu lont fishie
En longue-la mette sens plus
Et il festui la tient desus
Puis se torne la point toute
Contre lestoile sans doute
Quant il nuis est tenebre et brune
Con ne voit estoile ne lune
Lor font a laguille alumer.
Puiz ne puent ils assorer
Contre lestoile vers le pointe
Par se sout il mariner cointe
De la droite voie tems
C'est uns ars qui ne puet mentir."

TRANSLATION.

"This same (the pole-) star does not move, and
They (the mariners) have an art which cannot deceive,
By the virtue of the magnet,
An ugly brownish stone,
To which iron adheres of its own accord.
Then they look for the right point,
And when they have touched a needle (on it)
And fixed it on a bit of straw,
Lengthwise in the middle, without more,
And the straw keeps it above;
Then the point turns just
Against the star undoubtedly.
When the night is dark and gloomy,
That you can see neither star nor moon,
Then they bring a light to the needle;
Can they not then assure themselves
Of the situation of the star towards the point? (of the needle)
By this the mariner is enabled
To keep the proper course;
This is an art which cannot deceive."

There can be no question, from the whole bearing of this very curious passage, that the mariner's compass, however rude in its construction, was known prior to the year 1200. The very rough form of the instrument would seem to imply that it had not been very long employed, although it does not appear to be described as a recent discovery.

This is another translation of the same poem. I leave to my readers the choice as to accuracy; the sense is the same:

"For our father the pope
I would be one like the star
Which moves not. Very well see it
The sailors who are on the watch.
By this star they go and come,
And hold their course and their way;
They call it the polar star.
It is fixed very unchangeable;
All the others move,
And alter their places and turn,
But this star moves not.
They make a contrivance which cannot lie,
By virtue of the magnet;
An ugly and brownish stone,
To which iron spontaneously joins itself,
They have; and they observe the right point
After they have caused a needle to touch it
And placed it in a rush.
They put in the water without anything more,
And the rush keeps it on the surface;
Then it turns its point direct
Towards the star with such certainty
That no man will have any doubt of it;
Nor will it ever for anything go false.
When the sea is dark and hazy,
That they can see neither sea, star, nor moon,
Therefore they place a light by the needles,
And then they have no fear of going wrong.
Towards the star goes the point,
Whereby the mariners have the skill
To keep the right way.
It is an art which cannot fail."

Professor Hansteen, in his "Inquiries concerning the Magnetism of the Earth," quotes an Icelandic historian to prove that the directive quality of the natural loadstone, if not the artificial needle, was known nearly a century before the date of this poem. "Arc Frode," says Mr. Hansteen, "by whom the Landnamabok of Iceland, the history of the discovery of that island, was written, mentions that Floke Vilgerderson, a renowned *viking*, departed from Rogaland, in Norway, to seek *Gadersholm* (Iceland), some time in the year 868. He took three ravens as guides, and in order to consecrate them to his purpose, offered up a great sacrifice in Smörsund, where his ship lay ready to sail. FOR IN THOSE TIMES SEAMEN HAD NO LOADSTONE (LEIDERSTEIN) IN THE NORTHERN COUNTRIES. In Icelandic, *Leid* signifies region, and the pole-star is named *Leidstjerna*, consequently *Leiderstein* signifies guiding-stone. According to Snorro Sturleson, Arc Frode was born in the year 1068. This account was probably written about the end of the eleventh century, at which time it appears unquestionable that the directive property of the magnet or loadstone was known, although there is nothing in the passage that leads to the suggestion that the mariner's compass had been invented."

Another fragment of song of the thirteenth century, after eulogizing the polar star as the sailor's guide, continues:

"The sailors, by its light,
It throws often out of mishap,
And assures them of their road;
And when the night is too dark
Still it is of such a nature
That it *makes iron draw to the loadstone,*
So that *by force and by reason,*
And by a *rule which lasts ever,*
They *know the place where it is.*
They know its position on the way
When the night is perfectly dark,
All those who practice this art.
They push a needle of iron
Till it almost disappears
In a bit of cork, and touch it
To the brown loadstone.
Then it is placed in a vessel full of water
So that no one push it out.
As soon as the water is still,
To whatever place the point aims,
The polar star is there without doubt."

In the Spanish "Leyes de las Partidas" of the middle of the thirteenth century there is this passage, indicating that the use of the compass was not unknown to that nation:

"The needle which guides the seaman in the dark night and shows him both in good and in bad weather how to direct his course is the intermediary agent between the loadstone and the north star."

These verses show that the polar star was the seaman's usual guide, but that when it ceased to be visible a compass was made by charging a needle with loadstone and fixing it in a rush or to a cork placed in water, which disclosed the north point. This simple contrivance could only have been used when the sea was perfectly smooth.

It is also worthy of notice that this application of the needle to navigation is not spoken of as a new invention, nor as more extraordinary than the polar star itself, whence it may be inferred that it had been for some time adopted by mariners.

Cardinal Jacot de Vitri, a native of France, who had been engaged in the Crusades, which terminated about 1291, and was appointed Bishop of Jerusalem, wrote, about 1204, "History of the Crusaders and their Voyages to the Holy Land," wherein he described the compass as being in familiar use among the Saracens on the coasts of Syria, although a novelty to himself.[3]

Before the commencement of the fourteenth century we have proof that the compass was known to northern nations. In 1266, on the

[3] British Annual, 1837.

death of Swedish Count or Duke Ponteris Byrges, or Byrgeris, Jarl Sturla celebrated his memory in a poem consisting of twelve verses, and producing his poem in an assembly of the States, was, as a reward for his genius, presented with a mariner's compass.

M. Azune, a Frenchman, who published a dissertation upon the mariner's compass in 1800, in order to prove its *French* origin, traces in authors of about the middle of the thirteenth century allusions to it. Vincent de Beauvais and Albert la Grand, before the year 1340, evidently refer to it.

Chaucer, the English poet, who was born in 1328, and died in 1399, mentions, in the Knight's tale, a "compass;" but it is doubtful if he meant a mariner's compass,—

> "Round was the shape in manere of a Compass,
> Ful of degrees the hight of sixty pas. . . ."

He says also in the Merchant's second tale, that vessels steered at night by the pole-star,—

> "For they were cleen in despeyer, because they mighte not see
> The loder whereby these shipmen their course take eche one."

Though unknown by its modern name, there are undoubted notices of the compass in the naval accounts of Edward III.'s reign. The loadstone was then named "the sailstone," or "Adamansti," and the compass itself "sailing-needles and dial." In 1345 a "sailing-piere" or stone was supplied to the "Plenty, of Hull," and in June, 1338, "two sailing-needles and a dial" formed part of the stores of the barge "Mary of the Tower." The clerk of the king's ship "George," 1345, among other items, purchased, in Sluys and Flanders, sixteen "horologes,"—probably hour-glasses,—paid for the "Amending of divers instruments belonging to the ship, 7*d.*," and "for twelve stones, called adamants, called sailstones, bought there, 6*s.*" That these were magnets is evident from Chaucer's verses,—

> "Right as betwixtin *Adamantis* two
> Of even weight a pece of *iron* set,
> He hath no might to movin to ne fro—
> For what that one maie hale, that other let."

Dante, in his "Paradise," refers to the needle "which points to the star." Goropius, according to Mori, insists that the inventors of the compass were either Danes or Germans, because its thirty-two points are written or pronounced in the Dutch or Teutonic language by all nations using the sea. This would only prove the improvement of the compass by the Teutonic people, for at first there were only the four cardinal points, or at the most eight points, named on the compass,

viz., N.E., N.W., S.E., S.W., which eight winds had been so named by Charlemagne in 790. The French claim its discovery and introduction to nautical purposes from the north point being invariably ornamented with a *fleur-de-lis*, and from the allusions made to it in their early poets and historians. Others urge its French origin from the term *calamita*, by which the Italians still denote the compass, and which is said to be derived from an ancient French word, *calamite*, signifying a little frog, to which the compass in the first instance was assimilated, when it was made to float on water.

There was written in black letter, about the year 1418, a curious rhyming document called the "Dominion of the Sea." It was an exhortation to England to keep her seas, describing her commerce and that of other countries.

In this document the first distinct mention is made of the mariner's compass being in general use. It was termed the "shipman's card." See Hakluyt, vol. c.; Lindsay, vol. i. p. 442.

From the facts handed down through the imperfect records of the thirteenth and fourteenth centuries, we may conclude that the properties and virtues of the mariner's compass were known before the time of Flavio Gioia; but to him must belong the honor of making it practicable, by dividing it into points marking the eight principal winds and contriving the method of balancing it, though the English have claimed the credit of the latter improvement, as also to be the contrivers of the method of suspending the box by gimbals, so as to keep it always horizontal. To the people of Bruges we are indebted for the division into the thirty-two points as at present used.

The compass-box and hanging compass used by navigators were invented by William Barlow, an English divine and philosopher, in 1608. The invention of the compass set every maritime nation upon improvements and discoveries. By the help of it the Spanish made their discoveries of the Western world, the Portuguese their way by sea to India and China, and the English and Dutch their Northern discoveries, all of which, but for this little instrument, would have remained unknown, with all the wealth acquired from them, as also most of the knowledge that has been gained by commercial intercourse. Nothing can be stranger than a comparison of the timid coasting of the ancient mariners, and the courageous daring of those who, placing their reliance upon the faithfulness of this little point of steel, steered far from land upon an open and unbounded sea. Dryden has happily described the infancy and helpless state of navigation before its introduction:

> "Rude as their ships was navigation then;
> No useful compass or meridian known,—
> Coasting, they kept the land within their ken,
> And knew no north but when the pole-star shone."

Spite, however, of Gioa's improvement and of prior discoveries, the intrinsic value of the needle does not appear to have been fully appreciated until it was successfully employed in the voyages undertaken by Henry, Duke of Visco, the brother of the King of Portugal, about 1410. The discovery of the variation or declination of the needle from the true north point has been claimed for Columbus and Sebastian Cabot. There appears, however, in a volume of manuscript tracts in the University of Leyden, a Latin letter, by Peter Adsiger, in which the principal properties of the magnet are mentioned, and, among others, the *variation*.

It is, in fact, a little methodical treatise, divided into two parts, the first of which is subdivided into ten, and the second into three chapters. This letter, which seems intended for the instruction of a particular friend, is dated in the year 1269. A Mr. Cavallo obtained an exact copy of this curious letter, and inserted ample extracts in the original Latin and in English in the supplement to the second and third editions of his "Treatise on Magnetism," from which it appears that the writer, at that early time, was acquainted with all the principal properties of the magnet.

THE VARIATION OF THE COMPASS.

Columbus observed the variation of the compass, without doubt, on the 13th of September, 1492. On that evening, being about two hundred leagues from the island of Ferro, he perceived for the first time that the needle, instead of pointing to the north star, varied about half a point from it, or between five and six degrees to the northwest, and still more on the following morning. Struck with this circumstance, he observed it attentively for three days, and found the variation increasing as he advanced. He at first made no mention of the phenomenon, but it soon attracted the attention of the helmsmen, and filled them with consternation. "It seemed," says Las Casas, "as if the very laws of Nature were changing as they advanced, and that they were entering another world subject to unknown influences." They apprehended that the compass was about to lose its mysterious virtues, and without this guide what was to become of them on a vast and trackless ocean? Columbus taxed his science and his ingenuity for a reason to allay their terror, and, the Copernican system not being yet known to him, he ascribed the variation not to any fallacy in the compass, but to the movement of the north star itself.

The truth, perhaps, is that the variation of the compass from the true north was known before the date of the voyage of this celebrated navigator, and he was merely the first to discover that the variation was not the same in all places. His son Ferdinand states that, on the 14th of September, 1492, his father first discovered the variation, and that in consequence his crew mutinied, supposing that the needle had lost its

polarity, and that they would not be able to find their way back to Europe. If this means anything more than that Columbus then discovered the variation to be different in different latitudes, it is erroneous; at least, if it was then for the first time discovered by Columbus, it is obvious, from what has been stated, that the fact itself was known nearly two hundred years before that time.

The first variation compass was constructed in 1525, by an ingenious apothecary of Seville, Felipe Guillen; yet Pedro de Medina, at Valladolid, in his "Arte de Navigar," published in 1545, denied the variation of the compass; but the reports from commanders of ships in distant voyages obliged the landsmen in their closets to give up the point. Martin Cortez, in a treatise on navigation printed at Seville about 1556, treats it as a thing completely established. Thus we see it was sixty years after Columbus observed and reported the variation of the compass before the truth of its existence was admitted.

Modern discoveries tell us to look to the earth, and not to the heavens, for this variation, and some laws have been established by which we can make correction of the error, and the phenomenon is no longer cause of alarm; yet we are still as ignorant of its cause as was Columbus. It has baffled alike the pride of science and the experience of the practical. It is probable that Sebastian Cabot did not make his discovery of its variation until 1497, when he sailed on his first voyage of consequence for the discovery of the northwest passage.

When Vasco de Gama reached Melinda, in 1497–98, he applied to the king for a pilot to conduct him to Calicut, on the coast of Malabar. He obtained as a pilot a native of Guzerat, and the Portuguese showed this man an astrolabe; but he paid small attention to it, and they were greatly surprised to find him well skilled in the use of the compass. But the compasses in use in the Indian Seas were found to be inferior to those in the Portuguese fleets.

DISCOVERY OF THE DIPPING OF THE NEEDLE.

The inclination or dipping of the needle, when hung so as to play vertically to a point beneath the horizon, was first discovered by Robert Norman, a mathematical instrument maker in or near London, who, in 1576, found that besides the known directive power of the needle it had also a certain direction of inclination. He tells us in his book, "The New Attractive," that, "having made many compasses, and always balancing the needles before he touched them with the magnet, he found continually that, after he had touched them, the north point would incline *downward* under the horizon, inasmuch that the fly (or card) of the compass, which was before level, he was still constrained to put some small piece of wire on the end thereof to counterpoise it." He communicated his discovery to his literary friends, who advised him

to frame an instrument and make an exact trial of the greatest angle it would make with the horizon, and he found the inclination or dip, when the discovery was made, to be 71° 50′ or thereabouts.[4]

In the above work, and in "A Discourse on the Variation of the Compass," by Borough, the friend and patron of Norman, and the Comptroller of the Navy of Queen Elizabeth, published in 1581, "the variation at London is stated as 11° 15′ east," deduced from actual observations made by Borough, in 1580, at Lime-house. These works were corrected and reprinted in 1585, but the variation is still given as the same.

I own a little book, entitled "An Epitome of Navigation," &c., "by Henry Gellibrand, Late professor of astronomy in Gresham Collidge." "London: printed by Mary Clark for William Fisher, &c., 1680," which contains "rules for finding the variation of the compass and correcting the course, &c." Illustrated with two compasses, the one fixed, the other movable; the latter a little smaller, and placed directly over the former, to show at a glance the variation of the compass from the true north, represented by the immovable compass.[5]

[4] Churchman's Magnetic Atlas.

[5] I have also a curious little book, published in 1678, of which the following is the title in full:

"The Seaman's Spiritual Companion, or Navigation Spiritualized, being a new compass for seamen, consisting of thirty-two points; directing every Christian how to steer the course of his life through storms and tempests; Fit to be read and seriously perused by all such as desire their eternal welfare. Published for a general good, but more especially for those that are exposed to the danger of the seas. By William Balmford, a well-wisher to seamen's eternal welfare, and recommended to the Christian reader by J. F. [presumably John Flavel]. To which is prefixed a preface by Benj'n Roach, the author of 'War with the Devil': 'They that go down in the deep, and occupy in the waters, see thy wonders.'—Psalm cvii. 22.

"London, printed by Benj Herris, and are to be sold at his shop, at the Stationers' Arms in Sweeting rents in Cornhill, near the Royal Exchange, 1678; price, bound, one shilling."

It is a small duodecimo of 145 pages, with a moral poem for every point of the compass. A stanza will be sufficient to show the merit and character of the poetry:

> "The world's a sea, and as by nature we
> Come into it, we neither know or see
> Our Haven, unto which we ought to bend
> And steer our course; nor can we apprehend
> The usual means by which we are directed
> In this our voyage, till it be perfected.
> Heaven is our proper Haven, 'tis the end
> Of all our labors, thither we ought to bend
> And steer our course, that we the better might
> With hope of happy issue steer aright."

I have a similar work with almost the same title, and which seems, indeed, to have suggested the one just named. As added to the epistle dedicatory by John Flavel, is the "Imprimatur Geo. Strandling, S. T. P. Rev. in Christo Pat. D. Gilb. de Archiepisc. Cant. a Sac Domest. Ex Æd. Lamb., Dec. 14, 1663," or fifteen years before the publication of Balmford's book. My edition, however, is an

In 1683, Dr. Edmund Halley published a theory of magnetism, and a few years after the command of a ship of the royal navy was given to him, with orders "to seek by observation the discovery of the rule for the variation of the compass." This voyage was made in 1698. He returned in 1699; set out again the same year, and traversed various parts of the Atlantic and Pacific Oceans, and lastly formed a chart of the variation, which is highly valuable as a source of authentic observations on the variation of the needle at that time. An account of these voyages was published in 1701.

In the fifth edition of a "Treatise on Navigation," by Henry Wilson, published in 1746, there is a table of magnetic variations observed at various places by the author, on board H. M. S. "Barfleur," in 1718. This table is reprinted in the *London Nautical Magazine* for July, 1847.

THE LOCAL ATTRACTION OF THE COMPASS.

The local attraction of the compass was first noticed in Captain Sturmey's magazine in 1684, and observed and commented on by Dampier in 1691–93. Of course the binnacle would follow the invention of the compass, and the first well-lighted one on record was made at Wapping, England.

The variation of the variations, or the different declinations of the needle at different times in the same place, was discovered in 1634, by Gellibrandi, an Englishman, though some attribute its discovery to Gassendi, a Frenchman.

It was not till about the year 1750 that the method of communicating magnetism to steel bars was well understood; indeed, it had not been before attempted on bars of any considerable magnitude, and it was not till this date that the great advantage which these bars possessed over natural magnets was properly appreciated. This discovery we owe to Dr. Knight, a Fellow of the Royal Society. Improvements were made on his methods by Du Hamel, Michel, Canton, and others.

In 1805 a Mr. E. Hoppe, an Englishman, made improvements in the existing compass, and communicated them to the Naval Chronicle of that year. They consisted in "fitting the card with an *agate* for the

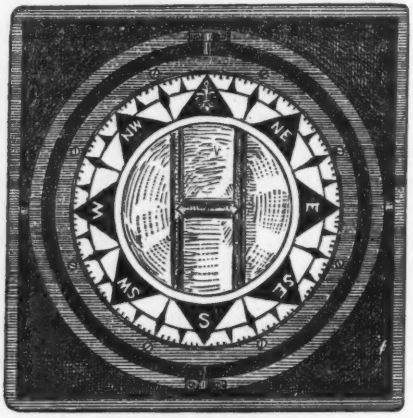
American reprint under the following title: "Navigation Spiritualized, or a New Compass for Seamen, Consisting of xxxii. points

of { Pleasant Observations,
Profitable Applications,
and Serious Reflections.

All concluded with so many spiritual poems. By John Flavel, Minister of the Gospel at Dartmouth, England. Printed by Edmund M. Blunt, at the Newburyport book-store, 1796," pp. 157, 12mo. Though the titles are so similar the books are very different; but the idea of taking the xxxii points of the compass as so many moral starting-points is the same. In this latter book the "Observations, Applications, and Reflections" are all in prose, with a poem to group them together, while the whole of Balmford's book is in verse.

needle to traverse upon," in "giving the needle a new form," in "graduating the circle so that the divisions were equally correct with those upon the sextant," and an invention "by which the moment the azimuth or bearing was taken the card is borne off the centre point, and remains fixed at the observed bearing until it be again suffered to act, whereby likewise both point and agate are effectually preserved when out of use." It would be an endless task to enumerate the numerous improvements and modifications that have been from time to time suggested. There is a room at the Greenwich Observatory filled with such contrivances,—some of great ingenuity.

The two principal American improvements are the transparent card, which can be read from above and below with equal facility, and the liquid-bowl compass invented by —— Ritchie, of Boston, and now adopted for general use in the navy of the United States.



RITCHIE'S LIQUID COMPASS.

The mariner's compass in present use consists of a circular plate, or card, the circumference of which is divided into degrees, whilst inside of it is another circle, having marked upon it the thirty-two points of the compass, or rhombs. Across this card, in the direction of the north and south, is secured the magnetic needle. In the centre of the card and needle there is a socket, sometimes having an agate cap, in which the pivot of the support of the card plays. This upright pin or pivot rises from the bottom of the round box containing the needle and card, and is secured from the dust, moisture, and agitation of the atmosphere by a covering of glass. This box is inclosed in another, usually a square box, and is suspended by two concentric brass circles, or gimbals, to the latter in such a manner that the compass hangs on points like a swivel, so that whatever the motion of the ship the needle and the card remain in a horizontal position, and under all

circumstances indicate the various points correctly. The azimuth compass is simply an instrument constructed with more care and nicety, and fitted with sight-vanes, magnifying-glasses, an accurate and nicely-graduated metallic rim, and a spring to stop the motion of the card and throw it off its centre while observing the bearing of the sun or other objects.

NOTE.—This historical sketch was written thirty years ago for, and published in, the *Portland Transcript*, but has been revised and extended for THE UNITED SERVICE.

Two interesting volumes connected with the history of the compass have been published by the Bureau of Navigation of the United States Navy Department, viz., "The Magnetism of Ships and the Deviations of the Compass, 1867." "The Magnetism of Ships and the Deviations of the Compass, comprising three Reports of the Liverpool Compass Commission, etc., etc., 1869."

GEORGE HENRY PREBLE,
Rear-Admiral U.S.N.

THE FRENCH FIELD ARTILLERY.[1]

No nation has ever produced an artillerist of such fame as France, in the person of the First Napoleon, and this arm of the service has always been a favorite one in that country from the time of Gribeauval downwards. It was in the French artillery that masses of guns were first used in action, and it was to his gunners that Napoleon I. owed his victories of Friedland and Wagram. Under Napoleon III. the artillery was always much fostered, and the first field rifled guns used in a great European war were those of the French in 1859.

We shall first sketch the organization of the army in 1870, and then that of the present day. In 1866 the French artillery consisted of[2]

Guard.—One field regiment of six batteries, one horse regiment of six batteries, one squadron artillery train of two companies.

Line.—First to Fifth Regiments, each twelve garrison batteries, Sixth Regiment Pontooneers; Seventh to Sixteenth Regiments, each nine field batteries; Seventeenth to Twentieth Regiments, each seven horse batteries; six squadrons artillery train of four companies.

By the reorganization of 1867 the artillery was formed as follows:

Guard.—One field regiment of six batteries, two horse regiments of three batteries (4-pounders), one squadron artillery train of two companies.

Line.—First to Fifteenth Regiments, each eight field and four garrison batteries, Sixteenth Regiment Pontooneers; Seventeenth to Twentieth Regiments, each eight horse batteries (4-pounders); two regiments artillery train of sixteen companies; altogether, one hundred and sixty-four batteries, or nine hundred and eighty-four guns.

Shortly before the outbreak of the war of 1870 the 25-barreled mitrailleuse was adopted, and twenty-four batteries were armed with those weapons, of which a great secret was made, and it was expected that they would take the enemy by surprise, as the rifled ordnance had done in 1859. But their tactical use was misunderstood, and these expectations were wofully disappointed. The hundred and twenty-six field batteries were then made up of seventy-two 4-pounder field, thirty 12-pounder field, and twenty-four mitrailleuse batteries.

[1] By special arrangement with *Colburn's United Service Magazine*, of England, this article appears in both magazines for December.

[2] Rüstow, "War for the Rhine Frontier."

When the army was mobilized each division (of thirteen battalions) received two field and one mitrailleuse batteries, while as corps artillery to the First and Third Corps were attached each four horse and four field; to the Second, Fourth, Fifth, and Seventh, each two horse and four field; to the Sixth Corps, two horse and six field; and to the Guard Corps, four horse batteries. The Guard and First Reserve Cavalry Divisions had each two horse batteries, the Second and Third Divisions each one horse and one mitrailleuse horse batteries, while the Army Artillery Reserve was composed of eight field and eight horse batteries. The cavalry divisions attached to the army corps had no special batteries told off to them.

The expected war broke out, the French force was broken like a straw, the two main armies were captured, and France found herself without a field artillery. Pages might be written on the tremendous efforts made by the nation to supply the want of an arm which military writers tell us *cannot* be improvised, but there is not space at our disposal. Suffice it to say that each corps of the Loire and Northern Armies had about the same proportion of guns as the old corps, and how well these improvised gunners stood to their guns is a matter of history.[3]

After the war the French army underwent a thorough reorganization, the system of permanently organized army corps, composed almost exactly on the German model, being introduced.

In France nineteen army corps exist.[4] Each of these has attached to it a brigade of artillery, consisting of one regiment of eight field, three foot, and two field depôt batteries; one regiment of eight field, three horse, and two depôt batteries; three companies of artillery train.

The regiments of pontooneers and the companies of artillery workmen and artificers, although belonging to the artillery, we omit as foreign to our subject. The total number of batteries is therefore:

Field, 304
Horse, 57 } = 2166 guns.
Foot, 57
Depôt, 76

The brigades bear the numbers of the army corps to which they are attached, and are stationed as follows:

Brigade.	Regiments.	Station.	Brigade.	Regiments.	Station.
1st	14th and 37th	Douai.	11th	28th and 35th	Vannes.
2d	17th and 29th	La Fère.	12th	21st and 34th	Angoulême.
3d	11th and 22d	Versailles.	13th	16th and 36th	Clermont.
4th	26th and 31st	Le Mans.	14th	2d	Grenoble.
5th	30th and 32d	Orléans.		6th	Valence.

[3] Chanzy, "La Deuxième Armée de la Loire." Faidherbe, "Campagne de l'Armée du Nord."

[4] Armed strength of France.

Brigade.	Regiments.	Station.	Brigade.	Regiments.	Station.
6th	8th and 25th	Châlons.	15th	19th and 38th	Nîmes.
7th	4th and 5th	Besançon.	16th	3d and 9th	Castres.
8th	1st and 37th	Bourges.	17th	18th and 23d	Toulouse.
9th	20th and 33d	Poitiers.	18th	19th and 24th	Tarbes.
10th	7th and 10th	Rennes.	19th	12th and 13th	Vincennes.

The Nineteenth Brigade is intended to form the artillery of the Nineteenth Corps, which would be brought over from Algeria to France in case of war. The batteries in Algeria are foot batteries detached from the different regiments and formed into field or mountain batteries as required.

On mobilization the first regiment of each brigade is broken up, four of its field batteries being attached to each infantry division, while the other regiment forms the corps artillery. The general commanding the brigade becomes artillery commander of the army corps, with a staff of five officers.

The colonel of the First Regiment commands the artillery of the First Division, with one aide-de-camp, and the lieutenant-colonel that of the Second, also with an aide-de-camp. Each division of batteries is commanded by a *chef-d'escadron*. The colonel of the Second Regiment retains his command after detaching horse batteries (if necessary) to the independent cavalry divisions. The two depôt batteries of each regiment mobilize between them four artillery ammunition columns (Nos. 1, 3, 5, and 6) and two infantry ammunition columns (Nos. 2 and 4). To the First Division are attached the first and second columns; to the Second, the third and fourth; and to the corps artillery, the fifth and sixth. The following is the war establishment of carriages for each of the various units:

Description.	Guns.	Ammunition Wagons.	Spare Gun-Carriages.	Wagons.			Infantry Ammunition Carts.
				Forge.	Store.	Forage.	
Field or horse battery . . .	6	9[5]	...	1	1	1	...
Artillery ammunition column ...		24	4	1	1	1	...
Infantry ammunition column		...	...	1	1	1	27

All the carriages have six horses, except the infantry ammunition-carts and the forge- and store-wagons of the infantry ammunition columns, which have four only. It is also to be remarked that horse-batteries attached to cavalry divisions have only eight ammunition-wagons and a store artillery ammunition-cart, and to one of the batteries in each such division is attached a cart for dynamite, etc.[6] To each army corps is attached a park with one hundred and fifty-three carriages, divided into four sections of thirty-nine to forty-seven carriages, and these are horsed by two of the artillery train companies, which, for this purpose, are doubled, so that there is a company to each section. A

[5] Löbell's "Jahresberichte," 1879.

[6] Ibid.

dismounted section, a detachment of one hundred artillery workmen, and a section of fifteen artificers are attached to each park.

In Algeria six mountain batteries exist. These have each six guns, for each of which five mules are required (one for the gun, one for the carriage, and three for ammunition-boxes). Each battery has also three spare gun-carriages, sixty-four artillery and fifty-two store artillery ammunition, and twenty-two other boxes for tools and supplies, and one forge. Each mule carries two such boxes, and shafts are also carried for shaft draught.

The staff of a regiment of artillery on the peace footing comprises sixteen officers, thirty-eight men, and thirty-three horses. The following is the strength of the various units on the peace and war footing:

	Batteries.			Algerian Batteries.		
Peace Footing.	Field.	Horse.	Depôt.	Field.	Mountain.	Train Com.
Officers	4	4	4	4	4	4
Non-comm. officers and men of cadre	33	33	33	37	37	24
Gunners	70	72	70	95	188	63
Boys	1	1	1	...	.....	1
Totals	108	110	108	136	229	92
Horses, officers'	6	6	6	6	8	6
" riding	22	52	22	75	146	19
" draught	32	28	32		mules	20
Totals	60	86	60	81	154	45
War Footing.[1]						
Officers	5	5	5			5
Non-Comm. officers and men of cadre	40	40	40	remain		24
Gunners	115	110	(?)	unaltered		(?)
Totals	160	155				
Horses, officers'	120	170	120			
" riding						
" draught						(?)

The field artillery establishments are the nineteen schools (one for each army corps) attached to each brigade, in which are taught drill, administration, and the science of artillery. The pupils comprise young officers, non-commissioned officers, and men. The other establishments are more of a technical character. Mention must also be made of the *École Polytechnique* at Paris, from which first commissions may be obtained, and of the *École d'Application de l'Artillerie et du Génie* at Fontainebleau, to which officers on appointment are sent for two years.

[1] No tables of war strengths of the French artillery have been published, except for the cadres. Those figures are taken from the *Journal of the Royal United Service Institution*, vol. xxxi.

In 1878 a new field artillery material[8] was introduced, consisting of 90 and 95 mm. B. L. guns (systems Labitte and Labitolle) for the field batteries, and 80 mm. guns (Labitte) for the horse artillery. The 95 mm. gun was to be served out to two batteries of each corps artillery regiment, but in 1879 it was ordered to be classed as a siege artillery gun, and at the same time mitrailleuses were struck out of the list of field pieces. The 5 and 7 kilogrammes guns (system Reffye) were handed over to the territorial artillery. The following are the principal data:

Calibre of gun	80 mm.	90 mm.
Number of grooves	24	28
Weight of gun	425 kg.	530 kg.
" shell	5.5 kg.	8 kg.
Powder charge	1.5 kg.	1.9 kg.
Number of rounds in gun-limber, common	28	19
" " " shrapnel		7
" " " case	2	2
" " wagon-limber, common	30	21
" " " shrapnel		7
" " " case	0	0
" " wagon-body, common	60	42
" " " shrapnel		14
" " " case	0	0
Total rounds per gun	165	154

The breech-screw is on the interrupted thread system. The shell has a copper ring at the base to make it take the rifling, and an iron ring at the bottom of the head to centre it. Percussion fuses are used for common, and time with shrapnel shell. The carriage is of iron with a steel axle and wooden wheels with bronze pipe-boxes. In course of time the territorial artillery will also be provided with these guns.

The artillery of the territorial army has never yet, so far as we know, been called out, although officers and cadres have been appointed. Each army corps is to furnish a regiment of eight field and three foot batteries.

The uniform of the artillery consists of dark-blue dolmans cut loose, with black hussar lace, scarlet cuffs and collars with the regimental number, and yellow buttons; dark-blue trousers with scarlet stripes; and blue cloth shakos with scarlet braid, crossed guns in front, and scarlet *pompons*. In full dress a scarlet horse-hair plume is worn. The *képi* (undress cap) is dark-blue with scarlet piping. The belts are black, and great-coats blue-gray.

The train companies have blue cuffs and white buttons, but their dress is otherwise the same. Gunners carry carbines slung across their backs, and sword-bayonets; non-commissioned officers and horse-artillery

[8] Löbell's "Jahresberichte," 1878.

gunners have swords and pistols. The artillery-train drivers and gunners have also carbines, their non-commissioned officers swords and revolvers.

The French artillery is not well horsed, and complaints are frequently made of the inability of the horse batteries to keep up with cavalry. The prices for remounts are fifty pounds for officers' horses (all are mounted by the State), forty pounds for riding and thirty-six pounds for draught horses. Its greatest admirer could not call the French artillery smart. The men are wretched riders, and their clothing, though very practical, is not well fitted. The harness is frequently in a filthy state and also badly fitted. As in most Continental armies, it is blacked.

In the above organization it will be seen how closely the French have copied the German system. They had even improved on it by giving the corps artillery eight field batteries, but by the new German law their corps artillery is also raised to this strength. In one important particular, however, they differ. In France the field and garrison artillery form one corps, to their mutual disadvantage, the field batteries suffering in a slight measure from the clog of the garrison batteries, and those, in their turn, being seriously damaged in efficiency by being supplied with officers who may or may not (and usually do not) know anything of their duty. But in France the common-sense party are getting the upper hand, and soon we may expect to see this absurd and obsolete system destroyed.

LIEUTENANT J. M. GRIERSON, *R.A.*

NAVIES OF THE WORLD.[1]

WHILE recognizing the fact that great changes have taken place in the methods and appliances of naval warfare, we cannot fail to have that fact more plainly manifested by a glance at Lieutenant Very's "Navies of the World." Less than a quarter of a century ago there was hardly a place for such a work as the author has favored us with, the types of vessels and armaments then in existence being few and well known; but since that time, owing to the rapid advance made in the application of the arts and sciences in the development of the material of navies, we have so many types of vessels and armaments, that to be acquainted with them all would involve not only an extensive study but a laborious search for the necessary data.

Lieutenant Very, taking this labor upon himself, furnishes a work which supplies a want of the day, and in performing his task so well brings credit to himself and the service to which he belongs.

The design of the author is to furnish concise descriptions of the elements which go to make up the naval strength of the principal nations, making the work essentially one for reference, and, as such, valuable not only to the naval officer, but to the layman who wishes to be informed of the naval power possessed by the leading countries of the world. In carrying out this design the reader is generally left to make his own comparisons. The few cases where the author discusses his data make us almost wish that, even at a sacrifice of his plan, he had given us the benefit of his study on many other points in the work. We are still further justified in this wish by the fact that he was the first to make a creditable comparison of the English and French systems in his report to the bureau of ordnance in 1878. The conclusions at which he then arrived, although generally adverse to the English system, were borne out a year later by Mr. Spencer Robinson in an article contributed to the *Contemporary Review*.

The plan of the work embraces five parts, under the headings of 1, Fleets; 2, Naval Ordnance; 3, Torpedoes; 4, Naval Architecture and Construction; 5, Personnel.

[1] "NAVIES OF THE WORLD; giving concise descriptions of the Plans, Armament, and Armor of the Naval Vessels of twenty of the principal nations, together with the Latest Developments in Ordnance, Torpedoes, and Naval Architecture, and a concise summary of the Principal Naval Battles of the last Twenty Years, 1860–1880." By Lieutenant Edward W. Very, U.S.N.

As already stated, the author generally confines himself to concise descriptions, leaving the reader free to associate the elements for his own comparisons. In part five we have the noted departure from this plan, and here the author attracts our attention, not only to his style of expression, but to the excellent use he makes of his data in discussing the architectural and constructional development during recent years. The positions which the United States has taken in this line of development, with reference to England and France, are admirably discussed in the text, and still more graphically shown by a chart of architectural development for unarmored vessels. Occupying the last place in 1854, the United States, two years later, jumps to the lead by the introduction of the "Wabash" type, and subsequently increases it by the "Hartford" and "Iroquois" types. Until 1864 she holds her place with her new rates, and in 1865 takes a still greater lead by the introduction of the "Wampanoag," "Congress," and "Plymouth." During this period all three nations were advancing; but the United States proceeded with giant strides from a position far below France and England to one relatively as far ahead. From this point the study of the chart is very humiliating to the American, as two years later England passes the United States, and from this year (1867) until 1874 the American line exhibits a feature not to be found in either of the others,—a downward curve indicating deterioration. In 1874 the American line commenced to ascend again by the introduction of the "Trenton," and by the improvement of some of the war types and the use of rifled ordnance made a still further advance, but not sufficiently great to give us relatively as good a position as we held in 1854. Then, as now, we occupied the last position; but in the one case England was midway between us and France, while now England and France occupy nearly the same plane, leaving us far behind and very much alone.

The chart will serve a more useful purpose than one of interest if its study shall impress upon the American not only the desire, but the determination, to aid in regaining the lead which belongs to us.

Treating of the architectural development of armored vessels, the author traces, in chronological order, the attempts of different nations to attain to and keep in the line of true development. As this line could be established only by experiment, and its direction determined by failures in divergent lines, it has made the effort a very expensive one, and while all fleets have been greatly strengthened, it has been done at a cost far beyond what the result would warrant.

Accompanying this subject the author presents tables containing the ratios of the principal elements of iron-clad vessels to their displacements; and, as he rightly observes, a study of them will afford a useful lesson, particularly to those who, having but a superficial knowledge of the development of fleets, conclude that the matter of design is one of guess-work.

Discussing one of these elements—weight of hull—he shows how carefully the French have regarded it, and not only sought but succeeded in securing the least percentage of weight of hull to displacement, until the introduction of an all-steel hull in the Austrian iron-clad "Tegetthoff" reduced the weight to its present minimum of thirty-four per cent. As a contrast, the "Onondaga" is cited to show a case of inattention to this point. "Her weight of hull is fifteen per cent. more than that of the heaviest wooden hull amongst the French frigates, and thirty-three per cent. more than that of the 'Javary,' a vessel of exactly similar type. Her armor, turrets included, is three per cent. less than that of the 'Gloire,' instead of being, as it should be, fifteen per cent. more, and twenty-five per cent. less than that of the 'Javary.' Hull and armor together are at least ten per cent. above the average. By bad construction of hull a clear thirty per cent. of weight of hull was completely wasted."

That portion of the work treating of the *personnel*, while of minor importance, will be readily appreciated as placing at hand much information not easily obtained otherwise.

J. T. SULLIVAN,
Lieutenant U.S.N.

CAVALRY.[1]

III.

DRAGOONS.

"Stand fast, Dragoons, on the left flank!"
SIR WALTER SCOTT'S "*Legend of Montrose.*"

"Smite the . . . Philistines, Horse, Foote and Dragoones!"
English *Commonwealth Battle Cry.*

CAVALRY is an "Arm of the Imagination," and of THE Man (Leader) (Bismark, 47), as well as of the Moment (Bismark, 185). It is the right arm of barbarian power, as in India, particularly under Hyder Ali, or of scientific generalship, as under Frederic the Great. It is most terrible to savages, like the Indians *east* of the Mississippi; or to primitive peoples, like the Peruvians, who had never seen an animal larger than a llama; or like the Mexicans, who had no idea of a horse until they were ridden down by the iron-clad cavaliers of Pizarro or Cortes; or to a sequestered people like the Scotch Highlanders, whose largest beasts of burden were "tackies," ponies, some scarcely larger than Newfoundland dogs; or to broken-up infantry in a flat, unobstructed country; or to panic-stricken troops, as was the case at Ramillies. Regular cavalry has little or no terror to natural horsemen like the Cossacks or Spahis or Gauchos, when the latter have *room* to act, or to veteran infantry, except when the latter are caught at the greatest disadvantage. Our prairie Indians do not stand in any great awe of our regular troopers, while they pay every respect to our "mud-mashers," the footmen. It was not so with the Eastern Indians. Wayne understood

[1] The "Chronological Tables" referred to in these articles and attributed to Colonel von Kausler were prepared by General (when Colonel) von Hardegg. Both these officers belonged to the Wurtemberg service. It would seem almost impossible for such a mistake to occur, seeing that the writer was originally interested in the publication of the "Tables," and compared a large portion of the proof. What is more, the manuscript of these articles was read over by the translator of the Tables, and the clerk who copied them ought to have known the difference between the authors, because he handled them often enough. This realizes the story of the proof-sheet exhibited with a reward for the indication of the slightest error in it, which reward was never claimed; and yet, subsequently, an important mistake was discovered in the beginning of the form.

that, and his comparative handful of cavalry, in his "Battle of the Miamis," 20th August, 1794, "sent in" at the proper moment, converted a defeat into an irretrievable rout.

The most remarkable instance of this panic-effect produced upon the imagination by cavalry was Werner's relief of Colberg, 18th September, 1760. Fifteen thousand Russians were besieging little Colberg, defended by the old hero, Heyde, and his apparently fire-proof few. Those Russians had not only their works towards the place, but intrenchments against any possible relieving force. When things were at extremity, all at once, Heyde saw the besiegers abandoning their defenses and hastening to take refuge on board their fleet; then the vessels weighed anchor, made sail, and put to sea, absolutely terror-stricken lest the Prussian hussars should swim out their horses and board them. Werner had been detached from Glogau with five thousand cavalry, marched two hundred miles in twelve days, and on the thirteenth just swept the Russians into the sea, capturing siege artillery —in fact, everything, that the enemy could not rid themselves of in their flight (Archenholtz, book ix., 361). Such a thing had only been heard of or dreamed of once or twice before,—I. When, B.C. 208, "Hannibal [after the fall of Marcellus] flew once more to the relief of Locri: the terror of the approach of his Numidian Cavalry drove the Romans to their ships; all their costly artillery and engines were abandoned" (Arnold, 577), and Locri was saved. II. In 1642, the Austrians were besieging Glogau; Torstenson marched to its relief. "No sooner" had the Swedish general appeared "in sight of the Austrian camp" than the sight created such an alarm, that, forsaking their standards, the soldiers fled to the adjacent hills with disgraceful precipitation" (Naylor, iii. 420). The like has occurred only once since. Pichegru dispatched over the ice of the Texel, a detachment, an advanced guard, of a few hundred light cavalry (hussars?), to whom, 21st January, 1795, a fleet, imbedded in the ice that bore the assailants, surrendered, with a larger number of guns than there were French sabres around the vessels ("Armée Française," ii. 361). Still, while so vast an amount of glory accrues once and a while to cavalry for such extraordinary achievements, it simply proves the justice of the expression styling them the "Arm of the Imagination," on the principle "Omne ignotum pro mirifico est,"—*i.e.*, "Everything unknown is apt to be magnified into the marvelous or supernatural." In either case a broadside would have sent the victors spurring wildly in the opposite direction. Such triumphs are due to panic-terror; and such possibilities as the two related, led Marshal Saxe to declare that a routed army might be dissipated by pursuers rattling peas in bladders. In the same way the French, flying from Waterloo, were kept on a headlong run by a drum beaten by a boy whose legs had given out, but whose arms were still strong, who, picked up and mounted before a Prussian trooper,

continued to beat the charge throughout that terrible night, after Napoleon's overthrow.

And yet, despite such startling examples of the brilliant triumphs and marvelous exploits of cavalry, this Arm has never had its hoped, calculated, or expected effect on infantry in their sober senses, beginning with the conflicts between the first Franks (middle of the fifth century) and the Gauls. The whole force of the former consisted of infantry, while the latter had few footmen, but a numerous and admirable cavalry. The Franks were conquerors, and their success confirmed them in their opinion that infantry was superior to all the other arms. The result of this was, during the First Race and a part of the Second, for several centuries, the triumphant force of the Frank armies consisted almost entirely of infantry (Pascal-Brahaut-Sicard's "Armée Française," 1848, 1, 20).

There has been no change in the verdict of "Trial by Battle" through thirteen centuries, from the battle of Tagina, A.D. 552, where fifty picked archers (Kerntruppen) maintained a small eminence against three (four, v. K.) successive attacks of [Totilas gallant] Gothic cavalry; —(Gibbon, v. 271; von Kausler's "*Worterbuch der Schlachten*," iii. 104–108)—in this battle the centre was held by troops equivalent to dismounted dragoons (v. K., iii. 106),—down to the annihilation of the magnificent cuirassiers of Napoleon III. near Sedan, 1870, by Prussian skirmishers, where the latter did not even deign to form quadriglia to check their steel-clad antagonists.

Even at Platæa (B.C. 479), when the Persian cavalry were admirably handled and as ably led, they could effect nothing against the Greek infantry, armed with long pikes, like the Macedonian Sarissa, fourteen to sixteen, and for the rear rank twenty-four, feet in length, although not supported to any noticeable extent by light troops, bowmen or slingers, or horsemen. Here let it be remarked that the Persian general of cavalry, proper, Masistius (von K., W. der S., i. 204, 205), was killed, and Mardonius, the commander-in-chief, mortally wounded, both behaving as well as soldiers could, and setting a striking example at the head of their national cavalry. This shows that individually, the Persian nobles were neither fools nor cowards, and that their defeats were due to the inferior physique, fortitude, armament, and discipline of the Asiatics as compared with those of their adversaries. (Compare Bismark, 88 and 88 (1).)

The only cavalry, pure and simple, that achieved any marked success over the Roman legions were the Carthaginians, directed by Hannibal. The legions, invincible as a rule, had to succumb afterwards, and again, it is true, to the Parthians, but the swarms of the latter were equivalent to water-spouts of mounted riflemen,—archers with unerring aim on the swift, untiring horses of the desert and steppes. When infantry became next to worthless—because neglected and despised—riders, cased man

and animal in mail, and almost invulnerable to the worthless weapons accorded to the unhappy villains or serfs on foot—rode them down like stubble. Wherever infantry were organized on correct principles, armed in accordance with appropriate tactics, such as the Flemish under Van Artevelde, fourteenth century, they made the cavalry smart and repaid the scorn of the knights with their slaughter, gave them hard blows for "glove money;" and washed out the insults of the proud chivalry in perfect baths of their blood. The young but stalwart Swiss infantry taught the veteran cavalry of the Dauphin of France, at St. Jacob on the Birs (1444), a lesson which that astute ruler, after he became Louis XI., turned to precious account when subsequently organizing his own splendid army. In the same century (fifteenth) the magnificent cavalry of Charles the Bold was shattered upon the pikemen of the Thirteen Cantons like potsherds thrown against a Cyclopean wall. Then, again, when the Austrian chivalry dismounted to play the part of dragoon-pikemen, as at Sempach, the Swiss footmen, proper, crushed them in the same terrible style in which they had broken to pieces the chivalry of Burgundy, and filled, as at Morat, a vast ossuary with their bones. At Crecy, Maupertuis, and Agincourt the British long-bowmen piled the ground in front of their stakes—afterwards styled "swine-feathers"—with fearful hecatombs of the lordly chivalry of France,—

"Rider and horse in one red burial blent."

In the sixteenth century, at Westeras, 29th April, 1523, the Dalecarlian levies with their long spears or pikes defeated the veteran Danish cavalry and impaled hundreds of horses. At Westeras as at Bannockburn, 25th June, 1314, it may be said that the freedom of Sweden and of Scotland was secured by the firmness of the peasant pikemen who bore the brunt of the struggle, and by their primary success over noble cavalry determined the result.

At Fleurus the unflinching squares of the Dutch infantry of the Prince of Waldeck hurled back the repeated charges of the Household Troops of the "magnificent" Louis XIV., directed by that consummate general, the fearless hunchback, Luxembourg, and, with scurrilous taunts, challenged them to come on and try it again. Even the superlative cavalry of Charles XII. would have been repulsed at Frauenstadt by the infantry of Schulemburg if the troops had "only done their duty for a quarter of an hour or had been worthy of their leader. In vain he reminded them of their victory at Punitz, where, after the Saxon cavalry were overthrown at the first onset, the guns captured and two battalions cut to pieces, nevertheless, the rest of Schulemburg's infantry stood their ground." By this time evening's shades had settled on the field, and the horses of the fearless Swedish cavalry, terrified at the discharges of the musketry flashing through the deepening darkness, became so unmanageable, that the second charge failed.

Thus the Saxon general was enabled to extricate himself with honor from a field where he covered himself with glory and his troops, unworthy of such a commander, with shame for themselves, for had they followed his example they could have boasted a decisive victory over the invincible dragoons of the Alexander of the North and left him on the banks of the Oder, *not* the Greek honors of the Granicus, but the Roman disgraces of the Ticino and the Aufidus.

Even these and many other similar illustrations of the superiority of infantry over any cavalry, however enterprising and ably handled and admirably appointed, must abase their colors to the fight of the Pomeranian regiment, Manteuffel, of about 1800 foot, near Neustadt, 15th March, 1760. Thereabout, Laudon, one of Austria's chief worthies, and deserving of the exalted rank he eventually attained, fell upon these rough children of the shores of the brackish Baltic, with some 5000 horse. To his summons to "Surrender on most honorable terms," the rank and file returned an answer worse than the veritable growl of Cambronne at Waterloo. Six times Laudon charged and was beaten back by these "obstinate, strong-boned, heavy-browed people, not so stupid as you think," although the proverb has been spit at them of "Esel (obstinate) wie ein Pommern." "The Austrian cavalry had 300 killed and 500 wounded; the Pomeranians (assaulted throughout their withdrawal of 12 miles at every favorable opportunity), 35 killed and 100 or more wounded or prisoners. This *was* well done, and recalls the exquisite simile of Codrington, a Parliamentary officer, in regard to the conduct of the London city trained bands at the battle of Newbury, in "England's Great Civil War" (102), who "endured the chief heat of the day, and had the honor to win it; for, being now upon the brow of the hill, they lay not only open to the horse, but to the cannon, of the enemy; yet they stood undaunted and conquerors, against all; and like a grove of pines in a day of wind and tempest, they only moved their heads or arms, but kept their foot sure, unless, by an improvement of honor, they advanced forward to pursue their advantage on their enemies." It is said that England's poets and people, even Shakespeare, owed almost all their finest language and imagery to the beautiful vernacular of the early translations of the Bible, especially Tyndal's, and in Isaiah vii. 2 there is an expression similar to that of the Parliamentary soldier-historian: "And his [King Ahaz's] heart was moved, and the heart of his people, as the trees of the wood are moved with the wind."

This beats the stand of the British infantry at Waterloo, and surpasses the astonishing endurance of Blücher's foot belonging to his army of Silesia in the course of the famous reverse (beginning at Vauchamps, 14th February, 1814) of his fond hopes and gallant enterprise and first audacious dash upon Paris.

A curious reader will find a narrative of these bloody occurrences

in Alison (Harpers), iv. 301–2; E. J. Gould's abridgment, Barnes & Co., 393; Cust. ii. 4, 1814–15, 193–6; Scherr's "Life of Blücher" (*sein Zeit und sein Leben*, etc., etc.), but the account which furnishes the clearest picture of the features of these fights illustrative of the present article will be taken almost verbatim from Major-General I. Mitchell's "Fall of Napoleon" (ii. 237–9).

"Such, indeed, was the case, and the position of Blücher, near Vauchamps, 14th February, 1814, exposed with only 15,000 infantry and 1600 cavalry to the attacks of a whole army animated by two successive attacks and the presence and direction of Napoleon, flushed with victory, and *having nearly* 10,000 *cavalry in their ranks*, appeared almost desperate. . . .

"Formed in squares, the gallant band commenced their dangerous march. Their feeble cavalry was soon thrown and forced to seek shelter between the masses of infantry, *who remained unshaken in their compact array*. As day wore the French brought infantry and artillery into action, but with as little success. The fire of grape and musketry told fearfully in the closely-serried ranks of the brave [Prussians and Russians], but it neither shook their courage nor their order; and their guns, though few, and their fire, though given only at the intervals of halting, replied fast and well to that of the assailants. . . .

". . . The march, though performed in perfect order, was slow and tardy, as the Russians retired by alternate lines, one line of squares halting till the other passed through the intervals, took post, and fronted. Double time was thus required, while a large body of French cavalry, estimated at 6000 men, were seen moving slowly round the left flank of the allies, with the evident intention of interposing between them and the forest of Etoges, which, if gained, promised to shelter them from farther pursuit.

"Day was closing fast, and, under constant losses, the retiring columns had arrived within less than a mile of the forest of safety, when the whole mass of hostile cavalry was seen drawn up before them. . . . The horsemen came on, and, circling round the small and diminished band of allied infantry, charged upon them from every quarter. Loud rose the shout of '*Vive l'Empereur!*' as the countless squadrons rolled *their clumsy weight* against the squares; but louder still pealed the volleying musketry as the fiery flashes gleamed quick and fiercely through the darkening air. Some horsemen fell, the many paused, till, exposed to the continued storm of shot, they recoiled in broken masses from the compact and steady column that advanced in proportion as their foemen gave ground. Charge after charge was rolled back in this manner, the *feebly-trained cavalry never venturing to strike home* or break in upon their formidable enemies, nor ventured the thousands even to pass through the intervals of the exhausted columns which now served as passages for the artillery. Guns were moved rapidly from the rear to the front of the retiring masses, and round and grape, sent rattling over the plain, opened a road for the infantry squares, who, unbroken and unvanquished, but diminished by a third of their number, gained the tangled wood that sheltered them from farther pursuit. Seven dismounted guns remained in possession of the French, who had not taken a single one sword in hand. . . ."

Few military readers are or should be unacquainted with the peculiarities of Bonaparte's successes in Egypt and Syria against the Mamelukes and Turkish cavalry, beginning with the combat of Chebreisse, 13th July, and battle of the Pyramids, 21st July, 1798. In these, especially the latter, the best-mounted, boldest, and most self-sacrificing horsemen of the world could accomplish nothing against infantry almost

fainting under an African sun. It was a type of the Wahabees or Arabian swarms of horse wasting their fanatic valor (in 1818) upon Ibrahim Pasha's newly-organized infantry, who, with "those long nails" (bayonets) "at the end of their guns," threw off their assailants as a bull gores and tosses the tottering horses of the picador in the Spanish amphitheatre. Kleber's fight of Mount Thabor (16th April, 1799) resembles in course and result that in which Bonaparte uttered his dramatic exhortation, calling upon his army to remember that from the summits of the neighboring Pyramids forty centuries were contemplating their behavior. Eight days previous, however, to Kleber's grand blow, Junot delivered a lesser stroke scarcely ever mentioned, but far more glorious to European soldiers. The Turkish army, consisting of 13,000 foot and 12,000 horse, passed over Jordan by the Jisr Benat Yakob (Jacob's Bridge), about eight miles north of the Sea of Galilee, on the 6th of April, and two days afterwards 3000 Turkish horsemen encountered 400 Frenchmen at Loube (Lubieh?), about ten miles northwest of Nazareth. Thereupon occurred "one of the most gallant combats which illustrate the French military annals." Three or four times the Turks charged Junot's little square, which, with only two men killed and fifty wounded, drove them off with a loss of over six hundred killed and wounded. On his return to France in 1800 (An. IX.), Bonaparte decreed that a picture should be painted of this "Contest of the 400 Braves." Four of the first French painters were competitors and prepared sketches. Gros took the prize, began the picture, painted the head of Junot, and then abandoned the work. There is one engraving of this fight, and perhaps more, but it is unworthy the subject.

There was an exact counterpart to this in 1836. The French had failed before Constantine and had to make a retreat of eight days (23d November–1st December) in the midst of clouds of pursuing Arabs, and under clouds which poured down alternately rain, sleet, and snow. The writer can testify to the occasional vileness of the winter climate of Algeria. The horrors of the Russian retreat in 1812 were again experienced by the French troops on a smaller scale, twenty-one degrees of latitude to the southward of Moscow, in the most torrid continent.

One day, 24th November, 1836, when almost every one despaired, Changarnier (*Tête de Fer*, Iron Head), then commanding a battalion of the Second Light Infantry, found himself assailed by twenty times as many Arab horse. So far from being intimidated or doubtful of the issue, he communicated his own confidence to his troops with a remark which has become historical: "My friends! look at those fellows; they are 6000, you are 300; the chances are even!" The result justified this comparative estimate.

Hundreds of similar instances might be presented to demonstrate

that a self-contained infantry can laugh at the efforts of any body of cavalry not altogether too disproportionate as to superiority of numbers. Sometimes it simply suffices for a small body of unbroken infantry to take a stand to carry conviction of this to cavalry elated by a pursuit of other disorganized masses. For instance, after A. A. Humphreys had split off Ewell's corps or division, and it had fallen a victim to the Sixth Corps and Sheridan's troopers at Little Sailor's Creek, one division of the Union cavalry made a dash at Mahone's splendid little intact division, doubtless supposing that it would be affected by the rout or capture of the larger body. A few shots satisfied the cavalry that it was best to leave Mahone "severely alone."

Per contra, it is true, there are some startling examples of the scathing—nay, overwhelming or obliterating—effects of a swoop of horsemen. The following is too notable to be passed over.

The horse who struck the annihilating blow hereinafter described, the Turkish Spahis, belong to the same class as the Croats or Crabats of the seventeenth century.

The Croats always were good partisan troops, likewise the Hungarians, but then they were light troops like the Cossacks, most suitable as éclaireurs and for outpost duty, but totally unfitted for a place in the line of battle. This was the specialty of the Croats in the Thirty Years' War under such a splendid leader as the notorious Isolani, but then as afterwards in the Frederician wars, they lost as much by their irresistible propensity for plundering as they achieved by their celerity and horsemanship. This was particularly the case at Leipsic, 1st, 1631, the turning-point, and so, on every opportunity down to Janikau, the decisive battle, of the great German religious struggle,—1618–48. They manifested the same obliviousness of true soldierly duty at Sohr, 30th September, 1745, in some respects a battle decisive of the second Silesian war. In all these cases their charges home and submission to discipline might have changed the fate of the day and of the war in favor of Austria, but they invariably forgot their duty in the lure of plunder. In consequence, at Janikau, Douglass, with the Swedish horse, finished up the last great infantry square which resisted, and at Sohr the Austrian cavalry left the field and allowed the Prussian horse to work their will; and right bloodily they did so.

Throughout the Austro-Turkish wars the imperial cavalry was inferior to the Spahis except on a few occasions, when in mass, for shock and shatter, an eagle eye like that of Eugene saw the critical moment, hurled, as at Centa or Zenta, a charge upon a wavering foe, and swept away at a blast 10,000 Turks. But there is no memorial on record of an imperial cavalry charge such as Marshal Saxe records, where a swarm of Turks actually rode over two Austrian battalions at the battle of Belgrade, and left out of a square of about 1600 men a heap of as many corpses and mutilated beings. Only two escaped,—the commander,

admirably mounted, and an ensign, who held on to the tail of his superior's horse.

Cavalry, in their pride, pomp, and circumstance of war, have always looked down on infantry, styling them "mud-mashers," "foot-wobblers" (Mrs. Nosebag styles them so in *Waverley*); but footmen have, nevertheless, invariably, the world over, foiled and mastered horsemen whenever and as soon as the former learned the invincibility of standing "shoulder to shoulder," whether in squares, circles, "*quadriglia*" (Bersaglieri Tactics), or, with breech-loaders, in line of battle; yet, even deployed as skirmishers, as in the Prusso-French war of 1870–71. To properly estimate the power of cavalry, and resist them successfully, doubtless requires the calm judgment and cool intrepidity of veterans, and these are the product of knowledge or discipline, habit or active service, the experience acquired on the field of battle. These alone can convert militia, volunteers or regulars, into veterans, and new levies into soldiers to be relied on under all circumstances. At Balaclava, 1854, the "thin, red streak topped with a line of steel" of the Ninety-third Highlanders, simply in "double rank," bore the charge of the Russian cavalry like a "wall of rock," and sent them reeling back. At Minden, 1759, six regiments of British infantry, supported by two battalions of Hanoverian Guards, broke and drove the French centre, composed entirely of the finest heavy cavalry; and at Prestonpans, 1745, a comparatively few raw Highlanders put to flight Gardiner's veteran dragoons. This realized the old man's remark in Macbeth (ii. 4):

> "'Tis unnatural,
> Even like the deed that's done. On Tuesday last
> A falcon [cavalry], tow'ring in her pride of place,
> Was by a mousing owl [infantry] hawk'd at and killed."

By the way the owl, contrary to popular prejudice,—erroneous, as usual,—is not only a courageous and often a fierce bird, but a very dangerous adversary to the feathered prowlers which have been selected as emblems or ensigns of war and rapine. The American great horned owl is "a bold and powerful bird, bravely resisting when attacked," "fierce in captivity, and some species emulate the game-falcon in its unerring stoop, swiftness, and fearless enterprise."

It would be impossible to refrain from a few additional notable examples were it not that want of space precludes the pleasure.

The stern fact is patent that cavalry as a rule have lost their prestige and power, and will be hereafter limited to their equally important but less brilliant duties of constituting the Eyes and Ears of an army. If such is the case,—and it is susceptible of proof, except in very exceptional cases; as, for instance, the running in upon a rebel brigade at Fairfield at dawn on the morning preceding Gettysburg,—then they should be armed in such a manner as best to be able to take care of

themselves so as not to become a prey. The glamour of traditional military prowess is rapidly passing away, also its follies, and soldiers are no longer so silly as to consider the capture of a pair of kettle-drums as commensurate with that of a standard. Nevertheless, this was once the case. In our days men look rather to substantial results than to the mere aggregation of trophies. Napoleon, miscalled the Great, more than once sacrificed veterans to preserve cannon useless under the circumstances, as during the Russian retreat. The weakness of men's judgment has kept up the prestige of cavalry, proper, as ministers to pride or pomp. Infantry, on the other hand, like most humble but indispensable instruments, are very useful, and Mounted Riflemen, adequately organized, drilled, and commanded, combining the mobility of cavalry with the tenacity of infantry, might easily, in conjunction with horse-batteries, be rendered perfectly irresistible. They will realize the conception of Isaiah, who saw, in spirit, those irresistible mounted archers for whom it is inferred that the Persians invented saddles "for the sake of giving a steady seat" to this chosen arm, "to which they always paid the greatest attention." "Whose arrows are sharp and all their bows bent, their horses' hoofs shall be counted like flint and their wheels [wheelings?], like a whirlwind, yea, they shall roar ("like the roaring of the sea"), and lay hold of the prey, and shall carry it away safe, and none shall deliver it."

The cavalry of the future will have to be very similar to the dragoons of the past,—mounted infantry, swift to strike and strong to hold. They might be organized on the principle adopted in some services,—ten men for action to every eleventh assigned to taking care of the horses,—or even after the idea of Charles XII. On some of his rapid expeditions every trooper was accompanied by a led horse to serve as a remount as soon as the horse ridden had become blown. This method is common among our American Indians. Civilization might learn much from barbarians for war purposes, since war, at very best, is savagery, and the wildest savage, developed through the advantages of education and experience, is likely to make the best soldier, and even general, especially of cavalry. What motto was adopted by Von Ense for his life of Seydlitz, the grandest exponent of his arm when at its apogee?—"A great general of cavalry must possess a rapid *coup d'œil*, an intelligence calm and solid, intrepidity, and prudence,—in a word, a variety of talents." These qualities are not derived or acquired elsewhere than in the field, where they are requisite. Hannibal was doubtless subtle enough by nature, but it was on occasions that demanded stratagem that he learned how to put his reformed military cunning into practice.

Cæsar mixed picked infantry with his chosen cavalry at Pharsalia, Froude's Cæsar, page 430. "His [Cæsar's] own scanty cavalry, mostly Gauls and Germans [Batavians], would, he well knew, be unequal to the weight which would be thrown on them. *He had trained an equal*

number of picked active men to fight in their ranks, and had thus doubled their strength."

The principal efforts of the first military organizers seem to have been directed to the formation or providing of troops who would to a certain degree, or in as high a degree as possible, unite the advantages or capabilities of infantry as well as of cavalry, of shooting or firing with those of the greatest mobility and shock.

It is curious to observe the fluctuations which these attempts occasioned, but the development of the "double fighters" was never lost sight of, although in the revolutions of the wheel of time they were sometimes on the top and sometimes beneath,—lost sight of as the tire and felloe sank more or less deep into the dust accumulating through a long period of miscomprehension, or the mud wet with the bloodshed of barbarian cataclysms, or the rubbish of that chivalry so brilliant in appearance but worthless as regarded the true application of the forces of a brave nation.

Thus far back in the authentic chronology of war, over twenty-five centuries ago, we find the mention of "archers mounted on horses" and "archers mounted on camels;" then their emphatic mention and representation disappears, to be revived on the same field which witnessed their first employment. About this time Philip of Macedon and Alexander, his lesser and not his greater son, organized his double fighters,—dimachoi,—destined to serve in the saddle and on foot. A century afterward the Romans had to organize their jaculatores, voltiguers, velites, mounted behind cavalry to enable their inferior cavalry to effect anything against the cavalry, proper, of the Carthaginians. These troops were "so lightly armed as to be able to keep pace on the march with mounted soldiers." Here we have an indication of the "commanded musketeers" sandwiched with the cavalry, proper, of the seventeenth century, just as glimpses are caught of the "rank entire" system of which there are indications in the British service previous to and during the American Revolution (L. N. D., 39). Hybrid cavalry or mounted infantry manifested themselves from time to time in all the regularly organized armies of the world. All at once, under Philippe Auguste, 1290–1330, the "*satellites*" make a mark in France, recruited from the people, not from the higher classes, from a brave and vigorous class, who decided battles, fought equally on foot and on horseback (*nec minus pugnabant sine equis quam in equis*) (A. F., i. 101), and proved the most trustworthy troops of the French monarchy. Under Charles VI. appeared the arbelatriers, who, like the satellites, discharged their duties in as well as out of the saddle. Louis XI. had 400 crennequiers,—soldiers admirably mounted; and Daniel adds these crennequiers were certainly mounted arbelatriers—*i.e*, cross-bow men (A. F., i. 250). The first germ of light cavalry in the transition period from arrows to bullets (end of fifteenth to sixteenth, beginning of

seventeenth century) had a great analogy to modern dragoons, whether under the titles of crennequiers, stradiots, argoulets, or carabins (A. F., i. 299); the only difference was the substitution of the match-lock or wheel-lock for the cross-bow. At the opening of the sixteenth century, according to Longey's book on military discipline, even the estradiots were taught to fight on foot and oppose cavalry like pikemen (imitating Justinian's Dragoon spearmen (B. B. 28 (1) Procopius)) with their arzegaye or shaft pointed with steel at both ends; these were exactly the mounted pikemen of the succeeding century, who were regularly organized as mounted arquebus-men and mounted pikemen in the same proportions as the soldiers, furnished with the same weapons, belonging to the infantry proper. This brings the consideration, *seriatim*, down to the date (1558) when mounted infantry, under the name of dragoons, completed the triplet still in vogue of horse (cavalry proper), foot (infantry of all kinds), and dragoons, the last double-fighters supposed to be competent to perform the duties, on occasion, of either of the other two preceding branches of the service.

Within seventy-five years after the organization of dragoons proper the artillery became regularly systematized, and, before the seventeenth century was out, the engineer service. This completed the military quincunx, the infantry continuing to occupy the central, most conspicuous, and most important position,—one which it ever has held and always will hold in a scientifically constituted army; six to one under Philip and Alexander, in the most wisely composed or distributed army of antiquity. This is about the most practical proportion for general service in level or mountainous countries; at all events, so says Jomini. Do modern specialists know more than ancients? Certainly not; whether as much is very questionable. If military technical works were written during the periods of antiquity illustrated by the greatest war phenomena, they have perished. In the subsequent periods there are several which have no superiors in modern times. Substitute the weapons of to-day for those of his period, and the maxims propounded in his "Treatise on Tactics" by the Emperor Leo, the Philosopher, although he has been dead nearly a thousand years, might serve as a text-book. They have been translated into various languages, and recently published in French in the "Bibliothéque Militaire et Historique," Paris, 1854, which should be in the library of every soldier who seeks to thoroughly understand his profession.

Many men who have labored in the interests of progress have experienced the sad but usual fate of the poor wise men who saved the little city from the assaults of the great king who came against it (Ecclesiastes ix. 14–16),—of these even great men like Du Plessis Mornay, who influence greatly, but fail in the end through their own wisdom and virtue; for, as Solomon said (Ecclesiastes v. 16), "What profit hath he that hath labored for the wind?" "Man is a reasoning, yet by no

means a reasonable, animal." Many perish unnoticed in carrying forward the banner of improvement, like the six successive color-bearers of the First Ohio, who fell one after another assaulting Missionary Ridge on the 25th November, 1863; but still the flag was caught up, and crowned the captured height (L. C. W. in A., iii. 168, 1).

Perhaps no more striking examples of the effect and the efficiency of mounted riflemen were ever presented than in the conflicts of 1780–81 in the Carolinas during the Revolutionary war. Both sides resorted to this arm, and among the British Colonel Patrick Ferguson, Seventy-first Regiment, B. A., made a name with his corps of provincials organized both as foot and mounted riflemen,—a name which is still connected with the Brandywine, Germantown, various operations in New Jersey, Stony Point, engagements subordinate to the siege of Charleston, and subsequent enterprises, down to the fatal fight on King's Mountain. His men, selected for their proficiency, were armed with a breech-loading rifle of his own invention, the first ever used by organized troops on the field of battle. The Americans were not behindhand as marksmen. They took part under Sumter in almost every engagement and attack of posts which characterized these deadly, desultory campaigns. The crowning triumph of mounted riflemen was when they overwhelmed the great British partisan on whom Cornwallis relied to double if not treble his effective force by recruiting and disciplining the thousands of loyalists in the back districts of the Carolinas who were awaiting his advent to rush to arms. Reports of his activity and severity, false but effective, roused the population of the mountain valleys, who as yet had taken but little part in the struggle. They caught up their favorite Deckhard rifles, saddled their rough but sturdy horses, whipped up after Ferguson, overtook and surrounded him at King's Mountain,—a slight bald elevation near the Cherokee ford encompassed by woods. Then the mounted riflemen left their horses and took to the trees. Ferguson had about a hundred regularly-drilled troops—loyal Americans—and some nine hundred loyal militia. The Americans outnumbered him from one and one-half to three to one. The one hundred regulars charged bayonets upwards of four times, always driving back their assailants in disorder, but not rout. Gradually the circle of fire became complete, and, having shot down about all that were worthy to be called soldiers, the others would not fight any longer. This victory of the American mounted riflemen was the turning-point of the war at the South, and decided the American Revolution in favor of the colonies. The immediate result was to free North Carolina from the enemy. It compelled Cornwallis to withdraw from Charlotte, one hundred and sixty miles, to Winnsborough, and rekindled the resistance which had apparently burned out, although the coals were still alive under the ashes.

"In consequence of the memorable defeat of the British detachment

under Colonel Ferguson at King's Mountain, Lord Rawdon, by order of Lord Cornwallis, wrote (24th October, 1780) to General Leslie, then in the Chesapeake, suggesting the expediency of his advancing to North Carolina. 'No force has presented itself to us,' said Lord Rawdon, 'whose opposition could be thought serious to this army, but then we have *little hopes of ever bringing the affair to an action. The enemy are mostly mounted militia, not to be overtaken by our infantry nor to be safely pursued in this strong country by our cavalry.* Our fear is that instead of meeting us they would slip by us into this province were we to proceed far from it, and might again stimulate the disaffected to serious insurrection. This apprehension must greatly circumscribe our efforts.'"

It is the fashion of the day to treat of our cavalry in the last campaigns of the armies of the Union, particularly the last pursuit by the Army of the Potomac, not only as "Mounted Riflemen," but as such under a new aspect, and from this text Major Sir Henry Havelock, Bart., in his "Three Main Military Questions of the Day," Part III., "Cavalry as Affected by Breech-Loading Fire-Arms" (1867), delivers a digested opinion which would be very effective, were he always correct as to his data and justified in his conclusions. "Mounted Riflemen," which are no more than "Mounted Infantry" with improved fire-arms, or "Mounted Archers" prior to the invention of powder, are as old as the first military representations disentombed from the Assyrian mounds. Indeed, it is extremely questionable—as often impressed in these articles—if the very first cavalry were not archers on horseback. To a certainty the cavalry most dreaded by the Roman legions at the zenith of their organization were the Parthians, with whom every weapon, offensive and defensive, was subordinate to their bow. Dragoons are, after all, "Mounted Infantry," or riflemen under the disguise of cavalry, faint imitations of those inimitable archers. The Hungarians "established 'Mounted Riflemen' in the Seven Years' War." These rendered important service in the army of the Duke of Brunswick.

Military tradition assigns to the French Marshal de Brissac, who commanded Henry II.'s army in Piedmont, in 1558, the creation of Dragoons, who were neither more nor less than Arquebus-men on horseback,—*i.e.*, Infantry mounted on a lighter class of horses—in order to enable them to move more rapidly—than were provided for the cavalry proper, even the Chevaux Legers, loaded down with armor, etc. At one time the substitution of mules was attempted, anticipating our Mounted-Mule-Infantry, belonging to the Army of the Middle Zone, and remounts in the Cavalry Corps of the Army of the Potomac[2]

[2] On a previous page allusions were made to "MULES" as *mounts* and *remounts*, founded on the partly published and partly manuscript narrative of this campaign by a staff officer of the Cavalry. This experienced Volunteer soldier, a Brevet

during its last campaign (1864–65), by three centuries; but the men would not stand these animals, and the experiment was abandoned.

Lieutenant-General Baron Ambert admits that some etymologists derive the term Dragoon from *Draghen* or *Tragen*, in German [the "*Geschichte des Kriegswesens*," 3, 733, has "*Dragoan*"], which they say signifies "*Infanterie portée*" (Mounted Infantry). It is as hard to maintain as to refute this; but the derivation has much more sense than a thousand which have been adopted without question.

A later Military Dictionary, published in Rome in 1724, indicates that Dragoons derived their name from their rough [shaggy] coat, with a [peculiar] hood [in imitation of a dragon's head?], which, together with its loose sleeves floating out behind [like a cumbrous Hussar's dolman or Dalmatian cape?] when they rode rapidly, gave them some resemblance to the fabled dragon. But Sir Samuel Rush Myrick furnishes a derivation which would be the most satisfactory, if Dragoons were originally of English organization,—viz., that as "the *Carbineers* were so called from the carbine; the *Lanciers*, from the lance; the *Bombardiers* [artillerymen], from the bombard [original cannon]; the *Engineers*, from the [military] engine, and so the *Dragoniers*, as they are sometimes called, or Dragoons, from the dragon. Beamish's "BISMARK'S CAVALRY," 332–33: "One of two sorts of hand-cannon, *a serpentine* and a DRAGON (so styled from the shape of its muzzle, a dragon's head or jaw) invented about the year 1424." (Demmin, 68; 511, plate 4; 517, plate 29; see *Penny Magazine*, Army, 1, 373.) Brewer, in his "Dictionary of Phrase and Fable," has: DRAGOONS.—So called because they used to be armed with dragons,—*i.e.*, short muskets which spouted out fire like the fabulous beast, so named. The head of a dragon was wrought on the muzzle of these muskets. [*Drag*, Irish, means "fire"; *dreigian*, Welsh (silent flashes of lightning), fiery meteors, as Shakspeare has it,

"Swift, swift, ye dragons of the night!"]

or as Milton, in "Samson Agonistes,"

"——His fiery virtue roused
From under ashes into sudden flame,
And as an evening dragon [meteor] came."

"The piece [Dragon] derives its name from a species of soldiers by whom it was carried, who to this day are in France called and spelt Dragons, from the celerity of their movements compared to the fabulous monster of that name. Dragons or Dragoons were originally not

Colonel, U. S. V. Cavalry, who had seen as hard service at home and abroad as any living man, testifies to their use. A. E. T. was on Gen. Crook's staff and can be relied on for the exactitude of his statements, because he has a methodical mind, and, moreover, he took notes of everything that occurred. He may be considered excellent authority for anything he states.

considered as Cavalry, but only as *Infantry mounted*, for the sake of being specially transported from one place to another. The snaphanse is the Dutch name for the present locks used to our pieces" (Grose, Military Antiquities, vol. ii. page 297–98, note F).

"The last sort of which our horse troops are composed are called dragoons, which are a kind of *footmen on horseback*,[3] and do now indeed succeed the light horsemen, and are of singular use in all actions of warre. Their arms defensive are an open headpiece with cheeks, and a good buffe coat, with deepe skirts, and for offensive fire-armes they have a faire dragon (horseman's short musket or carbine) fitted with an iron worke to be carried in a belt of leather, which is buckled over the right shoulder and under the left arm, having a turnill of iron with a ring, through which the piece runnes up and down, and these dragons are short pieces of sixteen inches, the barrell, and full musket bore, with firelocks or snaphanses; also a belt with a flask, priming-box, key, and bullet bag and a good sword: the horse shall be armed with a saddle, bridle, bit petterell, crooper, with straps for his sack of necessaries, and the horse himself shall be either a good lusty gelding or a nimble stoned horse. These dragoons in their marches are allowed to be eleven in a rank or file, becausse when they serve, it is many times on foote for the maintenance or surprising of street wayes, bridges, or fordes, so that when ten men alight to serve, the eleventh man holdeth their horses, so that to every troope of an hundred there is an hundred and ten men allowed."

A manuscript in the Harleian Library, marked No. 6008, and entitled "A Brief Treatise of War, etc., etc., by W. T., in the year of our redemption, 1649," on the subject of Dragoons, has the following passages: "As for the dragoouiers they are to be as lightly armed as may be, and therefore they are only to have as followeth, calivers and powder flasks. I would also to have each dragoonier constantly to carry at his girdle two swan feathers or foot pallesados of four feet length and a half, headed with sharp forked iron heads of six inches in length, and a sharp iron foot to stick in the ground for their defense, whereas they may come to be forced to make resistance against horse."

The "*Geschichte des Kriegswesens*" appears, however, most just in discussing the etymology of Dragoon: "In conclusion," it reads in the original, Vol. I., Division 3, 733, "others pretend, and we share this opinion, that this ARM of *French origin* could not have borrowed its name from a foreign language, and that the Marshal de Brissac, wishing to render the newly organized troops redoubtable, to stimulate their self-respect, their activity, and their valor, gave them, as from himself, the name of *Dragons*, which expresses courageous, hardy, and enterprising

[3] The Puritan militia were composed of one-third Pikemen, two-thirds Musketeers; mounted, they would have been exactly the original Dragoons of the sixteenth and seventeenth centuries.

men. One fact is very remarkable in the discipline of the original Dragoons: 'They were not to resort to their sword except in case of absolute necessity.'" (G. des K., I., 3, 734.)

Fire-arms were already issued to the mounted troops, or Cavalry, about 1350–75, and Von Hardegg [II., 163; see *Penny Magazine*, Artillery, I., 373], in his Chronological Tables, places "False Use of Cavalry for Firing" in his IV. Period, between 1350 and 1388. Even Charles VII., of France, had, previously to 1460, Mounted Arquebusiers among his *Compagnies d'Ordonnance*, and, curiously enough, these formed the *Light* Cavalry, dependent on the *Gens-d'Armes*, which constituted his Heavy Horse, proper. (Jervis, 451.)

There were mounted Arquebusiers at the battle of Fornova, in 1495. It would seem that Dragoons and the invention of fire-arms which could be carried on horseback were contemporaneous, and that, since war received any organization, there never was a period without Dragoons or their equivalents.

Although Napoleon says that "Three thousand Dragoons ought not to hesitate to attack two thousand Infantry, favored by their position," even he would have found out his mistake had he lived in the generation following him. When Torstenson shot across Germany in December, 1643, five hundred miles in fifteen days, he mounted his Infantry or almost all his footmen (Menzel, 11, 387) upon horses, and subjugated Continental Denmark within six weeks (Coxe),—from Dobitschau, in Moravia, to Skagen, the northern point of Jutland, a march of nine hundred miles. This was the same Cavalry or Mounted Infantry, remounted in Holstein, which made a march of sixty to seventy-five miles, 23d November, 1644, *on one fodder*, overtook the Imperial Horse, fought it, and captured over four thousand prisoners.

In the Thirty Years' War, so near akin to our own great Civil War, and the wars following of Charles X., Gustavus of Sweden, Mounted Infantry, or dismounted Cavalry, marched to the assault of fortified places even front with Infantry, proper. When, 4th May, 1632, Wallenstein besieged Prague, two breaches were soon effected, and an assault made. The first attack failed. Wallenstein then made the cavalry (Dragoons) dismount, and, sword in hand, drive the Infantry back to the ramparts, which were carried at this second combined onset, in which the dismounted horsemen played such an important part. The "Swedish Leonidas," the one-armed Colonel Slange, with three regiments of dismounted Cavalry, or Mounted Infantry, behind the ruinous wall of Newburg, stopped the whole Imperial Army under the brave, however bad, Piccolomini, for three days, beat back three attempts to storm, and surrendered only on the fourth day, after Baner, by this resolute resistance, had been saved. Another notable instance of this kind of service was the defense of a village near Ratibor, in Moravia, in April, 1742, by Seydlitz, against five thousand Hungarian Cavalry.

After proper reconnoissances, by means of barricades and every other possible preparation, he was enabled to maintain his position for several hours with only thirty dismounted Cuirassiers, armed with short, clumsy carbines. When half his men were down and his cartridges exhausted, he surrendered, but only upon the most honorable conditions. A more desperate resistance is scarcely on record, but Seydlitz was no common man (Von Ense (Delarclause)'s Seydlitz, 8–10).

Substitute the aggressive for the defensive, and the military *Fasti* of the Black Eagle furnishes a "Roland for this (the preceding) Oliver." During the operations prior to the battle of Sedan, August 28, 29, 1870, two squadrons of the Fifteenth Prussian Hussars dismounted, and carbine in hand, stormed the Village of Voncq, defended by Turcos, considered among the best skirmishers of the French Army.

On the 28th September, 1813, General Thielmann attacked, with volunteer cavalry dismounted, Albrecht's large manufactory at Zeitz, which was strongly occupied with French Infantry. The dismounted horsemen comprised Cossacks, Hungarians, Bohemians, and Prussians. After a short skirmish with carbines, the building was stormed sword in hand, many of the garrison were cut down, and one colonel, fifty-five officers, and one thousand men were made prisoners (Beamish, X. 238).

At Rocroy, 19th May, 1643, where the Spanish-Walloon Infantry went under forever, the French Dragoons, or Arquibusiers on horseback, on the right wing, leading off the attack, performed prodigies of valor, partially enveloping the modern phalanx (*Tercios*), heretofore deemed invincible. So effective were these Dragoons, that they carried off from the Infantry, proper, its new-born and growing consideration. In 1615, the Dragoons fought exactly as did our Cavalry at Dinwiddie Court-House. In 1690 there were forty-three regiments of Dragoons in the French service. Turenne's Dragoons before Sinzheim, 1674, accomplished one hundred and twenty miles in four days, dismounted, played the part of Infantry, stormed the town and enemy's position, mounted, swam a river, and fought with equal success in a battle in which the enemy rallied seven times, and charged eight times, in vain, these indomitable Dragoons. For many years the Dragoons were shuttle-cocked from the Heavy to the Light, from the Light to the Heavy, Cavalry. At one time, indeed, they were even claimed by the Infantry, and counted as such,—*i.e.*, as Mounted Infantry,—and down to the very last wars growing out of the great French Revolution, Dragoons were hybrids in every sense. During the Eighteenth Century they were reviewed by the same Inspectors-General as the Infantry. In the previous Century, the XVII., the Ordinance of 25th July, 1665, declared them to be Mounted-Infantry (B. 934 (2)). Previous to this, according to traditions, they performed the same duty as the companies of Grenadiers. In 1806, they made the campaign as Footmen, and

like these wore gaiters, not boots. Furetiere defines a Dragoon as a Cavalier *without boots!* Originally they did duty much oftener on foot than in the saddle; their horses serving merely as means of rapid transportation. They formed line with Infantry, filled up intervals, garnished fences or temporary defenses, fired by volleys, never drew swords, except pressed home by the enemy, and, at times, even filled the open centre of Infantry squares. Their first field-music was bagpipes, then drums, hautboys, and bassoons (and (?) shawms). In the French service they received cavalry trumpets instead of these in 1776. This was about the same time that the Light Infantry had (*clairons*) bugles.

The famous "Household Troops" of Louis XIV., "*Maison du Roi*" ("*Equites Prætoriani*" medal of 1681), were none other than Dragoons. Like the Swedish troopers of the "Iron Age" (seventeenth century), they did not hesitate to dismount to storm a breach or to charge Infantry.

The famous Mosquetaires (translating D'Aldeguier, 54 (165), in speaking of this Household Cavalry (*Equites Prætoriani*) in the famous sieges carried on under Louis XIV., their vivacity, and their impetuosity in attacks and assaults, in which they were irresistible, contributed greatly to the glory and to the reputation which the *Maison du Roi* acquired then and preserved still,—*i.e.*, until it was dissolved in 1848. (Michelet's France, xiv. 99.)

What a magnificent picture Macaulay draws of the attack of these dismounted or Royal Guards at Steinquerque. The English were all but victorious (M. iv. 253):

"All thought that the emergency was one which could be met by no common means. The King's Household must charge the English. The Marshal gave the word, and the Household, headed by the princes of the blood, came on, flinging their muskets back on their shoulders. 'Sword in hand,' was the cry through all the ranks of that terrible brigade: 'Sword in hand. No firing. Do it with the cold steel.' After a long and desperate resistance the English were borne down."

Even as late as 1778 a Military Dictionary[4] defines *Dragoons* as "Musqueteers mounted, who serve sometimes on foot and sometimes on horseback, being always ready upon anything that requires expedition, *as being able to keep pace with the horse and do the service of foot.* In battle, or upon attacks, they are commonly the *enfans perdus*, or forlorn hope, being the first that fall on. In the field they encamp either at the head of the army or on the wings, to cover the others, and be the first at their arms. They are divided into brigades, as the cavalry, and each regiment into troops, each troop having a captain, lieutenant,

[4] "A Military Dictionary explaining and describing the Technical Terms, Phrases, Works, and Machines, used in The Science of War." London: Printed for G. Robinson and Fielding and Walker, in Paternoster Row, 1778.

cornet, quartermaster, two sergeants, three corporals, and two drums. They are very useful on any expedition that requires dispatch, as they can keep pace with the cavalry and do the duty of infantry: they encamp generally on the wings of the army, or at the passes leading to the camp, and sometimes they are brought to cover the general's quarters; they do duty under the 'generals of horse and dragoons,' and march in the front and rear of the army. Their martial music is drums, and sometimes bassoons and hautboys."

Commander Robert Ward, in Chapter CIX. of his "Animadversions of Warre,"[5] in regard to "The Drilling or Exercising of Horse Troopes," "How the Dragoones ought to arme and demeane themselves," remarks, "The Dragoones are no lesse than a foote company consisting of Pikes and Muskets, only for their quicker expedition they are mounted upon horses, they are of great use for the guarding of passages and fordes, in regard of their swiftnesse they may prevent (forestall) the enemies' foote, and gaine places of advantage to hinder their passage. Their pikes are to have thongs of leather about the middle of them, for the easier carriage of them. The muskets are to have a broad strong belt fastened to the stocks of them, well neere from one end to the other, whereby he hangs it upon his *backe* when he rideth, holding his match and bridle in his left hand: any horse, if he be swifte, will performe this service, in regard they alight and doe their service afoote, so that when tenne men alight, the eleventh holdeth their horses, so that to every troope of 120 there is 132 men allowed."

Kellerman's troopers, who decided the battle of Marengo for Napoleon, were dragoons (D'A. 55; Lanfrey, II., 183). Charles XII. made every provision to insure the celerity and efficiency of his "Riders." "Every two dragoons had a batt or baw horse for carrying the baggage. The King of Sweden would not allow the cavalry to be burthened and weighed down by anything, in order that they might be always fit for long marches and energetic duty."

"This single regulation" (observes General Mitchell, in his "Eminent Soldiers," 207), "if we knew nothing more of Charles, would show that, as a commander of cavalry, he was immeasurably superior to any of the fur-caps and plume-crested leaders who came after him. It is almost a question whether a really greater *cavalry force* would not have been brought into the field last war than was done, if one-half of the

[5] "Animadversions of Warre, or a Military Magazine, truest roles and ablest Instructions for the managing of Warre, composed of the most refined Discipline and choice Experiments that these late *Netherlandish* and *Swedish* Warres have produced, with divers new Inventions, both of Fortifications and stratagems, as also sundry collections taken out of the most approved Authors, ancient and moderne, either in Greeke, Latine, Italian, French, Spanish, Dutch, or English. In two Books. By Robert Ward, Gentleman and Commander, London: Printed by John Dairson, and are to be sold by Francis Egglesfield, at the signe of 'the Marigold,' in Paul's Church-Yard, 1639."

horsemen had been made baggage-carriers to the other, so completely were the horses worn down by the loads they had to carry. In the French cavalry the power of galloping was altogether a rare quality."

The famous Seydlitz understood this. He told Frederic that after a hard day's march his favorite regiment of Cuirassiers would be so worn down by the double weight of the mailed riders, and that of the bulky animals and their heavy loads, that it would be a prey to a few hundred fresh Hussars, if attacked before they had time to blow, rest, and feed. The incident related by Gorgei of the encounter between the Austrian Cuirassiers and Hungarian Hussars at Teteny justifies the opinion of Seydlitz.

Mark how history repeats itself. Fourteen centuries after the Macedonians encountered the Hindoostanese their descendants continued still to fight according to the custom of their ancestors.

At the battle of Arnee, 1751, Clive beheld for the first time in action—happily for him, ranged on his own side—the activity and bravery of the *Mahrattas.* "They fight," says an excellent historian [Orme, i. 198], "in a manner peculiar to themselves: their cavalry are armed with sabres, and *every horseman is closely accompanied by a man on foot,* armed with a sword and a large club; and some, instead of a club, carry a short, strong spear. If a horse be killed and the rider remains unhurt, he immediately begins to act on foot; and if the rider falls and the horse escapes, he is immediately mounted and pressed on to the charge by the first footman who can seize him." (Mahon's England, vol. iv. page 309.)

"Les Dragons de Milhaud," under Napoleon, in 1814, have passed into a proverb among military critics, just as "Les Dragons de Villars" are familiar as a household word to the admirers of opera-bouffe. D'Aldeguier, in his work on "Cavalry," 45 and 46 (1), says, that Lamarque and Rocquancourt question whether Maurice of Nassau was the regenerator of the military art, and place him in this respect below Henry IV., which Mitchell contradicts (E. S., 337). Rocquancourt considers Maurice rather as a restorer of drill or military exercises. Such contradictory judgments, however, may be attributed to national partiality. Almost all the great critics unite in designating Maurice as the parent of modern military art and science, and concede that his camp was the school in which many of the most distinguished officers of the epoch learned the principles and practice the application of which made them afterwards so renowned. (Compare Jervis, 47, 88, 104, all three important.) He will be the real regenerator, if the times, so changed, ever should demand the effort, who draws the line; makes Cavalry, proper, what it should be, dependent upon the sabre, for which kind of troops there is little necessity in this country; acknowledges and organizes Mounted Infantry or Riflemen as a distinct Arm, and leaves to the Infantry its glorious *rôle* upon which no other arm can trench,

for it is the trunk of the tree on which all others depend, as in nature, the branches, the leaves, the flowers, and the fruit.

A very small proportion of cavalry, proper, is really needed in these days of exquisite long-range arms of precision. "Lloyd's observation on the subject [Patrols] is well founded when he assures us that the whole reconnoitering service of the army may be performed by fifteen hundred men [Cavalry] for an entire campaign" (Beamish's "Bismark," x., 269, 270). In 1709, Captain Curely, Aide-de-Camp to General Colbert, "proceeded ten leagues in advance of the division" and brought in all the *desired* information in regard to the retreating Austrians (Roemer, 225). During the Seven Years' War, Lloyd, with one hundred dragoons and two hundred Hussars, was accustomed to precede the army to which he belonged by sometimes three days' march, and kept his General [Daun] perfectly informed of the movements of the enemy (Jervis, 261, 280). A hundred similar instances might be quoted. This is to be indeed the "eyes" and the "ears" of an army. Good reconnoissances save TIME, and in battles MINUTES are decisive. To know and to *profit* by the *Minutes* is the *Talent for Commanding.*

After study, reflection, and observation, abroad and at home, for the last thirty years, there seems very little doubt that for the Cavalry of the Future to justify its enormous cost it must not be the Cavalry, proper, of the Past, but something partaking both of the nature of Dragoons and of Mounted Riflemen, or regularly drilled, not improvised Mounted Infantry.

When the bayonet was first introduced, the use of it was chiefly confined to the Dragoons and Grenadiers.[6] [As late as the year 1750, Dragoons were armed with iron shell caps, which they carried at their saddle-bow.] Vol. i. page 112, note t.

Markham, in his "Souldiers Accidence," published in 1648, p. 37, mentions a kind of piece I do not recollect to have met with elsewhere, which he calls a *Dragon*, and in his direction for arming the Dragon thus describes it: "And for offensive arms they have a fayre dragon fitted with an iron work to be carried in a belt of leather, which is buckled over the right shoulder and under the left arm, having a turnell of iron with a ring, through which the piece runneth up and down, and the dragons are short pieces, of sixteen inches the barrel, and full musket bore, with firelocks or snaphaunces (p)." (Vol. ii., page 297, first ed., 1786.)

The [English] Grenadier Guards were first raised as Grenadiers to

[6] According to P. [Pere] Daniel, tom. ii. page 498, Dragoons are of French origin, and were invented by Charles de Cosse, Mareschal de Brisac, when he commanded the army of that nation in Piedmont, some time about the year 1600. . . . The oldest regiment of Dragoons in the English army is the Scotch Greys, who were raised 19th November, 1683. These Scotch Greys are the famous cavalry which performed such marvels at Waterloo, and drew from Napoleon's lips the exclamation, "*Ces terribles chevaux gris comme ils travaillent!*"

the Troop of Horse-Guards in imitation of the Grenadier companies annexed to the regiments of Infantry. Note u, page 112, Vol. i.[7]

It is scarcely advisable to enter upon any consideration of the operations of our own mounted troops during the "slaveholders' rebellion." These have been sufficiently eulogized in Sir Henry Havelock's "Three [Military] Questions of the Day;" in Lieutenant-Colonel George T. Denison, Jr.'s "Modern Cavalry," London, 1868; and in Newhall's "Staff-Officer with Sheridan," etc. etc.

Without intending any offense, our troopers were rather "mounted infantry," or "mounted riflemen," than cavalry, proper, or even dragoons, proper. There were very few actual collisions which could be styled cavalry engagements, and only one which rose to the grandeur of a battle of cavalry. In the last, as far as numbers engaged, there is scarcely a conflict on record of similar dimensions on civilized fields. Nevertheless, even on this occasion, there were no charges such as are blazoned in history. Few mounted troops, it is true, have ever rendered more service to their government than the Union horsemen, but, as a rule, their achievements were rather exemplifications of endurance or fortitude, a quality which even Napoleon—styled by Kleber a "general of six thousand lives a day" (Montgaillard, vi. 254)—places in a much higher scale than valor.

It is very likely that the cavalry of the future, except for parade in connection with courts and ceremonials, of which there is nothing of the kind in this country, will be a combination of Mounted-Riflemen and Dragoons, more practical than the Chasseur d'Afrique, armed with the finest breech-loading or repeating arms of precision, and a cut-and-thrust sword in a leather scabbard, worn so as not to impede the wearer's progress when dismounted. He will very much resemble in outfit and duties the troopers (Reiterei) of the "Iron Age," Thirty Years' War, and those immediately succeeding. There were no finer horse-troops for general service than those of Gustavus, Cromwell, and Charles XII.

In a consideration of uniform, it is questionable if the head of a cavalryman of the future should not have some adequate protection, likewise his shoulders and arms. Nor would it be an absurdity to furnish certain regiments with cuirasses if metal could be rendered impervious to conical bullets at ordinary range without necessitating so great a thickness or weight as to render them actual impediments or insupportable burdens.

The "rank-entire" system or single-rank formation, as old as Charles VII. of France (1430–41), must eventually prevail when common

[7] "Military Antiquities respecting a history of the English Army from the Conquest to the present time. By Francis Grose, Esq., F.A.S. London: Printed for T. Egerton, Whitehall, and G. Kearsley, Fleet Street, 1801." First edition, 1786. Grose died in 1791 (?).

sense is able to overcome tradition, routine, red tape, and prejudice. It took a long time to bring infantry formations down to the present two deep, and cavalry to the same density. For the former the skirmish-line will eventually become the line of battle,—if, indeed, it has not practically become so already,—and for the latter the rank-entire formation. Thirty years ago an officer was laughed at for his proposition to manœuvre indifferently by the front and rear rank, by the left and by the right. Fifteen years ago the same individual was scarcely listened to when he advocated what he styled the "New American Tactics," which have been adopted with modifications in all the services of Europe. In some respects the world moves very slowly, but still *it does move.* It gains ground with marvelous rapidity nowadays when it takes the bit in its teeth in comparison to what it did a quarter of a century since. There have been greater changes within the past twenty years than have occurred within several previous centuries, and, with fire-arms that kill with certainty under favorable circumstances at fifteen hundred yards, the days of cavalry, proper, are over and the elegant trooper of 1860 has the same fate in his eye as the knight whose effigy serves at best as the ornament of a tombstone or sepulchral memorial.

As far as real tactics are concerned, things advanced almost as far during the "Iron Age"—the seventeenth century—as they have gone on gaining since. For instance, cavalry, from dense formations over ten ranks, solid, deep, was reduced to three and sometimes to two, and infantry received infinite mobilization. The fact is, men will not learn by the experiences of others. "Self-conceit is as bad as consumption," says the proverb; and it is this prevents common sense slipping in to the rescue and for development. Regular officers can see no talent or genius in the militia. A national academy controlled by regulars will not recognize as equals, except by compulsion, graduates of military schools maintained on an independent footing; no hierarchy will tolerate lay intervention; and so the wheel goes rolling on rapidly only when impelled by dire necessity, sometimes one portion of the rim uppermost, sometimes another, always advancing, it is true, by the impulse of "must," but sometimes so slowly as not to gain ground, perceptibly, at all. Napoleon added nothing to the art and science of war, and yet he is the "Diana of the Ephesians," the great deity to most professional soldiers, whereas, one hundred—yes, one hundred and fifty—years before him there were men who looked into the future farther in one day than the arch-traitor to liberty and to real liberal progress saw in the whole course of his career of assumption, tyranny, and crushing, cruel despotism.

The cavalry of the future can no longer be cavalry, proper, and must be a reconciliation between dragoons and mounted riflemen.

Although there must have been, undoubtedly, apparently good rea-

sons for the change in the mode of carrying the trooper's sword,—*i.e.*, suspended by slings from a waist-belt instead of being thrust directly through a frog in a shoulder-belt,—such reasons are by no means conclusive. Slings were certainly not used during the Thirty Years' War, nor during the first quarter of the eighteenth century. The Prussian dragoon regiment Von Lottum retained the baldrick certainly to 1786, perhaps later, and yet cavalry never performed better service than during that period. There never were more soldierly-looking soldiers than the troopers who won such renown with Gustavus Adolphus and his successors, Charles X., Gustavus, the Great Elector of Brandenburg, and Charles XII. The next period brought about a startling change, and under Frederic the Great cavalry attained as near to perfection as seems to be possible. It has never been equaled since, and, under existing and developing circumstances, it is not likely that the military world will ever see such cavalry again.

Major-General J. Mitchell, B.A., says that "in regard to tactics we have not made a step of progress since the days of Frederic II." the Great, and on submitting a like question to one of the best-informed officers who ever maintained the credit of our arms, he answered that "the best riders and the most maniable cavalry was in the time of Frederic the Great." "All my reading teaches me that for every service the cavalry could be called upon to discharge, there has been nothing like it, before or after." In a subsequent letter he repeats, "I am still inclined to think Frederic's cavalry the finest ever known."

Strange as the assertion may seem, the horsemen of the Thirty Years' War, judging from their pictures in the old books, bore a strong resemblance to the American troopers on both sides during the great American conflict, and a number of representations of the latter, in various publications, on envelopes, etc., of the period bear this out. Both wore felt hats, and, when they could get them, feathers, short tunics, and heavy boots, and were armed with sword, pistols, and carbine. Undoubtedly the critical eye would discover vast discrepancies which do not reveal themselves at a short distance or to passing observation.

General Sir Edward Cust, B.A., credits the introduction of Dragoons to Count Mansfield. The fact is, they were never introduced by any leader known to history. As soon as horse-troops were used in warfare, Mounted Infantry or Dragoons made their appearance. The reason that their introduction is attributed to this or to that general is simply owing to their assuming a prominent position as soon as practical science (*werkthatige Strategie*) had an opportunity to assert itself after the Dark Ages and Renaissance, Fifteenth Century. General Cust observes in his "Lives of the Warriors" (1600–1648, i., 76):

"Count Mansfield is regarded as one of the greatest generals of the seventeenth century; but he was too reckless of gain to have been a good disciplinarian, and his strategy was rather the effect of experience

than of study. As a tactician, he is said to 'have been the first to employ dragoons[8] in warfare;' by which I suppose it may be understood that he was the first to utilize a horse-soldier for purposes beyond the mere dash of a charge, by applying him more advantageously for outposts and intelligence. If this be so, he made a great advance in war tactics, since there is scarcely anything that can be rendered more beneficial to the march, either in advance or retreat, than a well-organized system of videttes and patrols, which constitute the eyes and ears of an army. However, there are other military writers who give Mansfield the credit of establishing the force that was known long afterwards by the name of 'Voltigeur:'[9] 'Qui pedites cum bombardis majoribus

[8] The term "Dragoon" was at the "introduction" often interchanged for the name of Horse Musketeers. They were the first description of horse that carried a matchlock instead of a pike. They were at the commencement armed with ordinary fire-arms and short swords, with hatchets, that they might act occasionally as pioneers. They were employed especially as a protection against the Croats, who, like the Cossacks of our own times, were very great annoyances to the march of regular troops, and Dragoons were employed to escort convoys, and were drilled to act on foot as well as on horseback.

Dragoons were only another step forward from Carabinierus. The latter name comes from the Spanish *cara*, a face, and *binios*, double, because they fought to the front and to the rear, like Parthians. The Dragoons had their Sappers and Miners just like the Infantry; they were armed with sabres and muskets with bayonets, wore gaiters and yet sported spurs, and carried axes, mattocks or stubbing-hoes, and shovels, the latter suspended from the saddle-bow. In 1669 Dragoons were often assigned to work in the trenches. At Rocroy they disputed with the Infantry the latter's growing reputation. Experts believed that with a sufficiency of Dragoons victory everywhere was certain.

[9] "*Voltigeur.* As Mansfield has received very universally the credit of having 'introduced dragoons' in war, it may not be an unfitting place and opportunity to suggest a new class of cavalry, which I [Cust] will call 'voltigeurs,' although I admit they are not at all identical with the *horse-infantry-man*, so called by the French. It may appear almost beyond the privilege of a veteran, who has been for so many years estranged from the battle-field as I have been, to ask the attention of his brother officers of the present day to the consideration of a new arm of service, but I will nevertheless without further phrase improvise my idea.

"*Voltigeurs*, as formerly used, are not, I believe, now known in any Continental army, and have never been introduced into our [British] own. But experience in outpost warfare has not been extended since Waterloo, and remains still with the old soldiers of Europe, or with the Federals and Confederates of the other hemisphere, for the campaign of the Crimea of a year and a day never went much beyond the business of a siege; and even the French-Italian and German-Danish wars have not included much marching and manœuvring, or '*la petite guerre.*' The mighty change in the implements of war, which must materially affect the attack and defense of places, cannot fail likewise to influence the meet [meeting] of armies. The old skirmisher must be considerably altered; yet he was, as it were, *the finger of war*, whose sensitive touch showed where to direct the blow: now, he will become part of the muscular action that gives it. A rifle that can carry a ball upwards of 1000 yards with a perfect certainty must tell upon every kind of formation, and this change should be well considered and provided for beforehand.

"I propose a cavalry regiment that should consist of twice as many men as horses [ancient Dahœ, modern Mahrattas],—say 1000 men to 500 horses,—the rider a lightsome, hardy, active little fellow, who should be as much at home with a horse

imposuit equis, ut sic celeritatem equitum et vim peditum ingeniosa hæc mixtura in iisdem consequeretur.'"

"Cavalry, it seems to me," writes a highly-educated and experienced Colonel and Brevet-General, "were in one sense all Mounted Infantry before the introduction of fire-arms. They had the same weapons and only added celerity and shock to the means of the Infantry, and at the same time lost in *ensemble*. It was the introduction of fire-arms, which made Cavalry, proper, as distinct from Mounted Infantry. Only during the imperfect period, when really it was more the *moral* impression of fire-arms than their actual working that made them formidable, could such cavalry be of avail. They were so when they had overcome the mental impression from the fire-arms of that day and could ride well enough to force it from the brains of their horses. Nowadays the effect of fire-arms is *real*, and Cavalry will go back to Dragoons with only the advantage of celerity and never of shock, unless uncommon circumstances reduce the Infantry more or less to its primitive condition. Conceit and want of gymnastic exercises is what puts Dragoons below what they might be. They should be picked men, for a self-sufficient man, or an infirm man, or a bad rider, or a bad shot, is useless for a Dragoon in rank, and hardly fit for a horse-holder.

"The artillery, in my opinion, except for breaching fortifications, is going in the same way. General —— tells me that the one hundred rebel guns at Gettysburg killed very few of the men in line; where

as a Pampas-man. As he could not be calculated on for close contest, he should be armed only with the best and lightest rifle and revolver; but as he might have also to defend himself on foot from the lance or the bayonet, he might carry a small sword of no great weight, but sufficient to ward a thrust. He should bear his ammunition round a waist-belt or on a bandolier; should be dressed in the best form of sportsman habiliments, with a skull-cap like that of the police. The men's packs should be carried two together on the crupper-pad unless when the horse carried double, at which time they should be strapped on the men's backs.

"At the proper time the men thus mounted should be carried briskly to the front, and as near to the enemy's formations as possible, when the hindmost should dismount and open fire,—the horsemen retiring out of fire, but near enough to take the men on their saddles or protect them from the approach of cavalry. It is possible that such an irruption, which would bring a deadly fire to bear upon the foe, would be so annoying and intolerable that, as in the olden time, under the effect of round-shot and grape, they would be obliged to move off the field; and then imagine the effect of these Voltigeurs upon the flanks and rear of a retiring column! They would be as moving rifle-pits, and would immensely disturb every operation.

"Such troops might also be usefully employed for other purposes, more especially if care was taken to select them from the more intelligent classes,—such, for example, as could speak French [one or more foreign languages], or sketch a plan, or make good observations. As special soldiers are appointed for the duties of the staff corps and for sappers and miners, so these horsemen might be rendered available for raids across the front of the armies two or more together (*ride and tye*), obtaining information about forage and supplies, and learning the facilities of a district to nourish and quarter troops. They might also execute many of the duties that have frequently to be sought for and organized after a campaign has been inaugurated, such as the gain of intelligence, etc."

they did mischief was in the hollow, whither a parcel of runaways had gathered themselves."

NOTE.—These articles on Cavalry constitute what lawyers term a Brief rather than an argument. The "Summing up" of the whole matter is this: With the development of artillery, but more particularly Arms of Precision, the application, proper, of the Cavalry Arm, proper, is, as a rule, ended. Consequently, as it is the Rule and not the Exceptions that should govern, the Cavalry of the Future must conform to the altered circumstances of War and become what Dragoons were intended to be,—Infantry "*carried*" on horses for expedition, with whom horsemanship and swordsmanship are secondary and simply *might* become an element of success,—*i.e.*, in a charge.

J. WATTS DE PEYSTER,
Brevet Major-General S.N.Y.

THE MEADOW-LARK'S COLORS.

One lovely morning in the bright September,
A meadow-lark rose gayly singing with the sun,
And took his flight o'er plains and hills and valleys
To where the reapers had their work begun.

Over the golden field a breeze was creeping,
Moving its masses in a gentle swell,
And many a brawny husbandman was reaping
The grain that laughed and nodded as it fell.

High poised in air the meadow-lark remaining,
Watched with a sigh the blooming rye laid low.
Till a dark cloud across the sun's face passing,
Robbed the still dying grain of half its glow.

Then up from out his little heart came welling
A song so full of pity and of love,
As pierced the perfumed air of early morning,
Ascending even to the throne of Jove.

The warrior god heard with a deep compassion
The song that marked the bird's o'erwhelming grief,
And vowed that he should ever wear a token
That he had sympathized and sent relief.

He spoke. The cloud, the mighty word obeying,
Changed to a rainbow floating in the sky.
While sunbeams all untrammeled now come trooping
Up the sweet valley to the field of rye.

One, the most brilliant, thro' the grain bursting,
On a scythe lighted for a moment's rest.
Then upwards glancing, the great Jove obeying,
Fell with warm kisses on the lark's dark breast.

And to this day the meadow-lark is wearing
The richest color that e'er greets the eye,—
A merry sunbeam's radiance, tempered
By the rich bloom that blossoms on the rye.

T. H. Stevens,
Lieutenant U.S.N.

MARINE SIGNALING.

In the August number of The United Service, Lieutenant Seaton Schroeder, U.S.N., brought to the notice of its many readers several suggestions looking to the safety and comfort of mariners, and among other matters touched upon was sound-signals to be used to show the course of steam-vessels without confusion. This matter may be carried much farther, especially in a mode of signaling, which, if codified and arranged by an international commission, would do much to prevent accidents at sea.

While the world is rapidly progressing in science, literature, and art, the fact remains that we have much to learn regarding what seems already to be completed. Hardly has an invention been patented and brought into use before improvements and additions are made that contribute largely to the value of the original, and so mankind is constantly seeking out and adapting to general use the latest and most approved ideas, and the world is becoming better and wiser therefor. The old saying, that he is a benefactor to the human race who makes two blades of grass grow where formerly there was but one, contains a truth that applies to every field of useful effort.

Among the many ideas that have been and are now being carefully considered by thoughtful men, is the best and surest means of preventing the disasters that are constantly occurring at sea, by reason of fogs, collisions, incompetency of those in charge, etc. Could the sea give up its dead and bring into port the millions of dollars' worth of property that lies hidden beneath its waves, what tales could be told! Suffice it to say that, sooner or later, something must and will be done which shall give rapid, complete, and sure means of communication between vessels at sea or on inland waters.

The means now in use are confined to very narrow limits, namely:

1*st*. *The steam-whistle.*—Only used at present by vessels to denote their proximity to each other, for friendly salutes, or to indicate the intent to pass either to starboard or port.

2*d*. *Private flag-signals.*—Indicating fixed or positive expressions, taking time to hoist and to read, and so slow and tedious that they are not very generally used. At night, lights in place of flags.

3*d*. *The waving of signal-flags to the right or left.*—By the army

code, and only in use in navies, is seldom used at sea, owing to the extreme difficulty in comprehending the motions of the flag with the vessel pitching or a stiff breeze carrying the folds of the flag in a wrong direction, thus confusing its movements.

Practically, there is *nothing* which will allow of messages, in any and all languages, being transmitted quickly by day or night. And yet this is what is required, and in this article it is proposed to show how simple a matter it is to adopt a system which leaves nothing to be wished for and is without complication. In fact, to demonstrate that *conversation at sea by sound* may be carried on between vessels, the ordinary alphabet being transmitted and received, letter by letter, in the same way, so to speak, as a child spells out a word.

It is a universal but erroneous impression, that signaling, as used for military purposes, is a complicated and difficult science, only to be acquired by constant study and long experience and practice. It is true that in the army and navy it is the duty of the signal service corps to be proficient in secret ciphers and to be able to make complications which, while misleading an enemy, are perfectly intelligible to friends, and hence the popular impression of the difficulty of mastering it; but for ordinary purposes the simple one of two elements is so complete and yet so easy of comprehension that it can be readily learned by any one of ordinary intelligence.

In the United States army it is simply this: The wave of a flag by day or lighted torch at night to the operator's right is 1; to the left, 2; to the front, 3. The alphabet is made up of these two elementary signals 1 and 2. The 3 is only used as a pause or end of word, sentence, etc. The end of a letter is expressed by halting the flag for a certain time in an upright position, thus rendering them distinct one from another.

For practical application of this to steam-vessels, let 1, or the right wave of the flag, be represented by a short, sharp whistle of one second's duration; 2, or the wave to the left, by a prolonged whistle of three seconds' duration; 3, or pauses, five seconds between letters and ten between words. It need not be confined to steamers and their whistles alone; sailing-craft can do the same with fog-horns and bells. In the case of sailing-vessels dependent upon bells, it is suggested that, as prolonged sounds cannot be made, 1 be a single stroke, 2 two strokes in rapid and immediate succession. Experiments have proved that this can be done, though at first somewhat confusing.

To use signaling by *sight* at sea by flags has been found only a partial success, but adapt the same system to *sound*, and you have a medium of communication by day or night, in stormy weather or thick fog. In case of a gale of wind blowing the sound away from the vessel signaled, the messages may be read by watching the escape of steam for the long and short sounds, or at night by using a flash-light.

The principle is the same, the application being varied only in

manner, and extending its usefulness to the saving of life and property, or enabling the lonely voyagers to send by passing vessels messages to the port they have left.

For illustration, we will take message,—

"Have yellow fever on board; need a surgeon."

In alphabetical numbers it is

122 — 22 — 1222 — 12 —— 111 — 12 — 221 — 221 — 21 — 1121 —— 2221 — 12
— 1222 — 12 — 211 —— 21 — 11 —— 2112 — 21 — 22 — 211 — 222 —— 11
— 12 — 12 — 222 —— 22 —— 212 — 112 — 211 — 2211 — 12 — 21 — 11 ——

Or read by the ear, the first word "have" being

H	A	V	E
Short, long, long —	long, long —	short, long, long, long —	short, long ——

To signal the course,—

11 —— 11 — 1121, or N. by N. W.,
212 — 12 —— 212, or S.E. to S.,

and so on with equal facility for any of the thirty-two points of the compass.

The following simple expedient will enable any person to make his own experiments:

Placing the alphabet before you, write down any message you desire to send, by numbers; another person, standing at any given distance, is prepared, with paper and pencil, to write down the sounds (numbers and pauses) as received by his ear as fast as they reach him. Take an ordinary whistle, such as street-car drivers use, and sound off carefully your message with the prolonged and short sounds and pauses, and the receiver of the message will be able, by subsequently referring to his alphabet, to read the message you have sent him. This can be, and repeatedly is, done without any previous practice, for it is a convenience, not a necessity, to memorize the letters.

By the aid of a simple mechanical contrivance one or two handles can be so attached that by moving it one way the short whistle would be given, the other way the prolonged one, so that there could be no possible confusion between the 1 and 2, and the operator's mind would be freed from any anxiety respecting the proper length of the two sounds.

Once generally in use on vessels, the comfort, safety, and convenience of all water travel would be greatly enhanced, for at the rate mentioned the swiftest ocean-steamers afloat, passing each other in opposite directions, would have ample time to exchange many messages. What can they accomplish *now* under the method in use?

Among the many instances in which this system would be of great service is the ability to signal the course, the name of the vessel and

the line to which it belongs, the captain's name, the locating of icebergs or wrecks that one vessel meets and warns another of, distress of any kind, such as sickness on board, mutiny, shortness of water, leaks, or anything extraordinary that has occurred.

A regular signal telegraphy might be adopted for the use of passengers, for there must have been many times when outgoing passengers would have given much to be able to transmit messages back to the port they have left without waiting until they landed on the other shore.

It only remains to say that the application of this method is simple and free from complications, and capable of being used under any and all of the circumstances which render the mariner's path so precarious and perplexing. The ingenuity of the machinist can render the working as simple as placing the hand upon a key-board; but the purpose of this paper will have been accomplished if those who read it will try for themselves the simplicity of the method.

The only matter of surprise is, why it has not long since been in use with at least the steamship lines of the commercial world, for certainly a want must long have been felt for a more rapid and sure method of communication than any yet used. Founded on the principle of the Morse telegraph, it is capable of being understood throughout the world, the alphabet rendering it distinct and comprehensive in all languages. No special originality is claimed, for it is only the application of an old and well-tried system in a new direction, and it is suggested in the hope that some benefit may result to the commercial traveling community, not only in America but throughout the world.

Before the publication of this article the system proposed has been practically tried before General E. L. Molineux and other gentlemen in the harbor of New York, and through the courtesy and assistance of Commodore George H. Cooper, U.S.N., at the Brooklyn Navy-Yard.

The experiments were made under my own supervision by men attached to the signal service corps of this brigade.

CHARLES E. BRIDGE,
Captain and Acting Signal Officer 11th Brigade, N.G.S.N.Y.

HEADQUARTERS 11TH BRIGADE, BROOKLYN, August, 1880.

TRIALS OF STAFF-OFFICERS.

II.—THE ORDNANCE OFFICER.

NOT the officer *de jure*, the blessed possessor of a commission in that gilt-edged array of scientists, the Ordnance Department, but the unhappy *de facto* ordnance officer who is detailed to perform the duties of that exalted station, but by no means to participate in any of the comforts, elegancies, *agrémens*, etc., appertaining thereto. Just the same abstruse and incomprehensible reasoning to which we alluded in a previous article (The Adjutant) as impelling the department commander (through his assistant adjutant-general) to select the hardest worked man in a garrison and make him judge-advocate of a general court, just that identical hang-for-a-sheep-as-a-lamb style of argument picked us out when adjutant and plunged us into an abyss of misery that, could it have been foreseen, would have led to our resignation on the spot.

We were way up near the Platte when it commenced, so easily, so innocently, yet insidiously, as every other diabolism commences, that no human soul could have foretold the sequel. "Mr. X," said the colonel, one bright June afternoon, "we march early day after to-morrow and the quartermaster wants arms for his teamsters; then we've got to arm these scouts,—yes, and mount them; there's Bill and Louis Sans something and Sioux Pete, and—well, a whole raft of 'em. We've got to fit 'em all out."

Mr. X replied that he had nothing but the arms and horse equipments of the non-commissioned staff and band, all in use, but added, with a wisdom beyond his years, "However, colonel, the quartermaster is in at the fort now; all these men are on his papers, and they are with him drawing rations. Why can't he draw arms, equipments, and all that right there? The commanding officer will issue on your order as district commander."

"So he could," says the colonel, reflectively; "but he says he'd rather you'd do it."

"Undoubtedly," replies Mr. X. "There isn't an officer in the army or out of it that wouldn't; it's like the best place to have a boil. But I want to get those regimental returns started as soon as we get in."

"You won't, then. I ordered every kind of desk and paper left back at Cheyenne; we're stripped for action. Tell you what: you just issue orders appointing yourself ordnance officer of the Black Hills column, and get a regular outfit of what we need. That'll fix it." And, with the cheerful consciousness of having done his whole duty and relieved himself of a burden, the colonel turns in for a nap.

Mr. X obeyed orders, issued the order signed by himself as acting assistant adjutant-general, then made a modest computation of what would be needed. Next day at breakfast time he showed it to the colonel, who cheerily remarked, "Oh, didn't I tell you? I fixed all that. We're going to have a rousing campaign, and we've got to have an abundant supply. It'll all be out this afternoon, invoiced to me, but you sign the receipts. Then bust into it and equip everybody soon as you can. Here's the two doctors, and some more scouts; and old Stamper, the paymaster, he's going, too, and Plodder and Hoofit, of the infantry. Fit 'em all out."

Mr. X's appetite for his breakfast left him suddenly. "In for a penny, in for a pound," quoth he.

Not until 4 P.M. did "the stuff" arrive at camp, and to X's unutterable horror three huge wagon-loads of bales and boxes were dumped around his tent and a brace of receipts, longer even than his face, were presented for his signature.

"You don't mean this is all for me?" he gasped.

"Thim's the orders," was the comprehensive reply, and as scouts, teamsters, doctors, and "doughboys" had been waiting for hours for the promised equipment, Mr. X had no alternative. With a few strokes of the pen he took the plunge into a purgatory which, beginning with the summer of the Centennial year, has held him in torment ever since, and only a merciful Providence can tell when he may hope for release.

Just then the colonel rode into camp. "Issued those things yet, X? I want you to write some dispatches."

"Here are the things, sir," said X, with a gulp, "only just come, but I'll write dispatches from now till—well, if you'll only hand that mountain of misery to somebody else."

"There ain't another man, X. You'll have to do it. The clerk can write the letters."

It is now 4.45; there are some twenty-odd parties waiting for supplies. X hurriedly summons a soldier, whom the colonel designates as the proper man to assist him as clerk, and pitches in. X takes the memoranda in his note-book, and the clerk hands out the items. Rifles to the teamsters, rifles and revolvers to wagon-masters, arms and horse equipments to the doctors and officers who are to "go along," ammunition to everybody. The number on each arm is carefully noted opposite each man's name. It is dark when they are sup-

plied, and, meantime, X, being adjutant, has had to go off to guard-mounting and to obey two summonses from the colonel, Mr. Plodder, of the infantry, obligingly supplying his place in his absence.

Suddenly Captain Snaffle appears. "X, why the mischief didn't you let me know you were issuing ordnance? I haven't a decent lariat or side-line left in my company."

"There, X, don't you see?" says the colonel, triumphantly; "I told you we'd want all these things. Now I've no doubt most of the other companies are in the same fix."

It won't do for X to say that the time *that* should have been attended to was the ten days we lay alongside a big ordnance depot at Cheyenne, where each captain could have supplied his company, and he wellnigh bites his tongue in two in his endeavor to hold it in.

Now, as adjutant, X issues orders to the company commanders to draw at once from the ordnance officer of the Black Hills column such articles as may be absolutely necessary to equip his company, by order of the colonel, and sends it round through the dimly-lighted camp. Snaffle's first sergeant promptly appears with the following: "Wanted, 38 lariats, 27 side-lines, 12 halters and straps, 8 curb-bridles, 15 saddle-blankets, 4 saddles complete," and behind him follow six soldiers, who dump an indistinguishable mass of "truck" in front of the adjutant's tent.

"What's all this, sergeant?"

"Worn-out stuff, sir, the captain said I was to turn in to the adjutant and get his receipt."

X springs to his feet with an expletive. "Where is the captain?"

"Gone away to the fort, sir; him and the colonel rode in together half an hour ago."

It is now 9 P.M. We are to march at four in the morning. The orderly sent around with the order comes back saying he "could only find one captain, Stand; the rest were all up at the post saying good-by, and the first sergeants and men had all turned in."

"I'll give you the new stores because I'm ordered to," says X to the sergeant; "but as for taking charge of all your unserviceable truck it can't be done," and the sergeant and his party go off laden with the new and the old, just as Captain Stand himself appears with his sergeant and a heavily-laden party. Their wants are the same as Snaffle's, and it takes another half-hour to dispose of them in a similar manner, only Stand says he's going right in to the colonel himself and get X *ordered* to receive his unserviceable stuff. "It can't be taken along," he says, not illogically.

He does go, and when he gets back to camp at midnight he brings a scrawl from the colonel to poor X bidding him receipt to all the company commanders for their "unserviceable stores." With the view of possibly mitigating his adjutant's woes, he adds, "A mere memoran-

dum will do." Do! Of course it will,—quite as much damage as an official receipt.

We are to march at 4.30, as has been said before; at 3.30 A.M. on the following morning the vicinity of the adjutant's tent looks like a junk-shop. He himself has had just thirty minutes' sleep, during which time he had a sentry over the piles of boxes and the litters of rope and leather. He is unrefreshed and even more aggrieved, for all the stuff is not in. Companies "O" and "S," whose captains had protracted their leave-taking until near reveille, are still to be heard from.

The colonel emerges from his tent brisk and cheery. "Great Cæsar's ghost, X! What have you got here?"

"Haven't had time to find out yet. There's more to come, sir," is the adjutant's mournful response; and at the moment, as everybody else is snatching a hurried breakfast, the delegations from "O" and "S" arrive with their demands and contributions, and the notes of the "general" have sounded and tents been struck ere the adjutant has settled *their* hash,—he has had none of his own.

"Sound 'boots and saddles,'" says the colonel, once more appearing. "You will go with the advance-guard, X. Of course you want to map the country towards the Cheyenne River."

"Of course I want to, colonel; but——" And, impetuously it must be said, poor X sets forth that here's enough ordnance to stop his pay for ten years if it isn't cared for.

The colonel checks him impressively. "Now, my dear young friend, don't get agitated. I've seen a heap more service than you have. You needn't trouble yourself a bit. Simply write an order to the commanding officer at the fort to receipt to you for the whole thing. Then make out your pencil memoranda, call upon the quartermaster for wagons, send your clerk in with it. There's the thing in a nutshell. Now, first write an order for Captain Munger with 'P' company to remain here at camp," etc. etc.

It sounded soothing as—but this is no place for the poetic. Let us see how it worked. The "pencil memoranda" and orders were soon made out, but not before the colonel with his command had started. The quartermaster was called upon for three wagons to carry the things back to the fort. "Three wagons! Good God! X, I've got to leave stores behind as it is! I'm just going after the colonel now hard as I can to tell him."

"Then say for me that all my ordnance is here on the open prairie without a guard, and I can't leave it until he sends relief!" shouts poor X, in desperation, while Pepper, the clerk, stands holding their horses. In twenty minutes the quartermaster is back, black in the face with wrath. "Why in perdition," he wants to know, "did X get so much d—d stuff?" and then, with much interspersion of profanity, tells him that he is ordered to unload two wagons, send all the ordnance back to

the storehouse in charge of Pepper, who was to return at once with the wagons, reload, and be sure and get to camp that night. "As for you, X, he says, 'Come on.'"

The adjutant hands the orders and memoranda over to Pepper, bids him do his best, and, putting spurs to his horse, after a hard ride rejoins the colonel. The latter is savage about something, and receives him with, "I've needed you a dozen times here. You ought to have had that ordnance business finished last night."

That night we camp at Rawhide Butte, twenty-five miles away, and after dark in comes Pepper. "Did you get receipts?"

"I did for the new stuff, sir; but for all that load of old truck the ordnance-sergeant wouldn't take it, sir; said he had positive orders not to."

"Did you show him the orders of the district commander?"

"Yes, sir; but he said he'd have to wait till the commanding officer got up,—that'd be eight or nine o'clock,—an' my orders from the quartermaster was to come right back wid the wagons, sir, an'——"

"And didn't you bring the unserviceable with you?" says X, sepulchrally.

"No, sir. I couldn't, sir: the quartermaster said I was to get right back and load up his things or they'd be stolen; and them was his wagons, so I had to leave the stuff at the storehouse."

"Inside or outside?"

"Well, sir, outside, a'course; the sergeant he was mad at bein' waked up at that hour, and——"

"That will do, Pepper," and X turns away to have it out with the quartermaster.

To cut short that initial experience, it is needless to say that when the count of that junk was made by the officials at the fort there was a shortage of articles, the money value of which (new) amounted to $372.33, and X, through subsequent wanderings, never found out what became of them.

We hunted Indians awhile along the base of the Black Hills. Then came tidings which brought us in to Fetterman, where vast accessions of officers, recruits, and horses joined and marched Big Hornwards with us. A new colonel had taken command, and to meet the emergency ordnance stores had been ordered by telegraph from department headquarters, and Mr. X woke one morning to find himself responsible for three hundred more bridles, saddles, and halters, five hundred more blankets, side-lines, lariats, etc., besides one hundred revolvers and no end of ammunition.

"Mount all the infantry recruits," said the colonel. Then came innumerable new doctors, scouts, teamsters, wagon-masters. "Supply them all," was the order.

We reached Goose Creek, at the head-waters of the Tongue, and there

was General Crook, with a large command, only waiting for our coming to launch forth and give battle to the hostiles over on the Rosebud, forty miles away. All one day was spent in getting ready, and our adjutant ordnance officer did not have time to call his soul his own.

"Get out your boxes," was the order. "Every officer of the three regiments is to go mounted. Give to each saddle, bridle, blanket, lariat, pistol,—anything he wants,—and take his mem. receipt." And while X was doing it, and writing orders for his colonel between times, and trying to scribble some few brief lines to the anxious ones far away in Eastern homes, there came a host of company commanders from other cavalry regiments, hungry for new equipments, correspondingly eager to get rid of the old. X appeals to the adjutant-general of the entire command.

"Fit 'em out all you can," says that energetic official. "We just want to get this crowd into fighting shape quick, and then we'll waltz over to the Rosebud and get blood by the bucketful." So more boxes are hacked to pieces, and for hours officers and men of three regiments of cavalry are going away to distant bivouacs laden with new equipments and coming back bowed down with junk. It is not improbable that on that August afternoon X receipted for a thousand pieces of old rope as so many unserviceable lariats. He and Pepper were well-nigh distracted. Even the newspaper correspondents—some of them—had to be provided with saddles or blankets. Even the scouts who for years past had been proud of their old calibre 50's came in with authority to swap them for new 45's, "temporarily, of course," said the order; but who that ever knew a frontiersman would bet a bean on X's chances of getting those 45's back "after the battle was over"?

(He didn't. It may as well be told here. Some were discharged on the Yellowstone when X was in the Black Hills. Some deserted in the Black Hills when X was on the Yellowstone. Some, like California Joe, Blue Peter, and one other reprobate, shot one another to death in private rows over poker, and nobody ever could find their arms. One, and one only, was killed in manly, open attack on the foe, and for three months what became of his gun was a mystery; then it was found in possession of a discharged soldier, who had bought it from—but this, as the novelists say, is anticipating.)

A glorious morning was the 5th of August, and a fine array the Big Horn and Yellowstone expedition presented as, stripped for combat, it sallied forth to battle. Late the night before X had sought the adjutant-general again. "I've got about forty thousand dollars' worth of ordnance left yet, sir; I must have a guard for it. Excuse my mentioning such a trifle; but even that amount would make a serious hole in my stipend."

"Why, hang it all, X, just bundle it into the wagons. They are

all to be left here. We won't be gone six days. We're just going to have one rousing old rattler of a tussle with these hostyles, and then we'll come back here and straighten out. Don't you see?"

It was alluring, of course, but not so reassuring. However, an order was obtained that the ordnance stores should be stored in wagons designated for the purpose. All the wagon-masters, teamsters, some doctors, etc., were to remain behind; but as adjutant of his regiment it wasn't to be expected that Mr. X could hang back, even to guard that incubus of ordnance stores, when his regiment was going into action. The command started out buoyantly, with four days' rations in the haversacks, and enough to make up ten days in all on the pack-mules. X went with them, and never set eyes on that ordnance again *until ten weeks after*, when what was left of it was trundled into his camp in the Black Hills.

It seems that we did not find the Indians over on the Rosebud. They were a little farther on by the time we got there, and a good deal farther on by the time we got to the next place. They led us a dance of eighteen hundred miles that summer and fall, and many a time did X find himself wondering how it fared with that ordnance. By the 1st of September he was responsible for property scattered all over that portion of the continent bounded by the Missouri, the Platte, and the Rockies.

Eventually these four or five hundred wagons moved round from the Big Horn by way of Reno, Fetterman, Laramie, and Hat Creek to the Hills, where they met us. Meantime, whenever a teamster lost his lariat, or wanted side-lines or a halter, or perchance a blanket or two, as the nights were growing colder, all he had to do was to go and help himself. Everything had been boxed up at the last moment at Goose Creek, but there wasn't an unopened box when they got to the Hills. Of course the tacit and honorable understanding which obtains among these gentry provided that they were to return these things; but as some got drunk and were left behind at Reno, and others got drunk and were discharged at Fetterman, and others got drunk and killed somebody at Laramie, they did not all remember such a trifle, and the same may be said of their arms.

When the Big Horn and Yellowstone expedition reached the northern Black Hills in September, about one-third of its horses were gone, left dead with exhaustion and starvation on the bleak prairies. As a rule the saddle and "kit" was abandoned at the same time, as there were no wagons to put them in. When we started from the Belle Fourche to march southward, the general had succeeded in hiring a motley array of miners' teams to carry along rations, wounded officers, sick soldiers, and a beggarly batch of Indian prisoners.

One morning, as the horses were still dropping by scores, X came suddenly upon a holocaust of saddles, bridles, and other cavalry equip-

ments. A sergeant and some men had heaped them in a huge pyramid and were working hard to make them burn. "What does this mean?" said he.

"Quartermaster's orders," said the sergeant. "Abandoned property; somebody ordered it fired, sir."

X thought of his tempting stores so many hundred miles away and a bright thought struck him; he had seen an empty wagon a short distance back, and hailing the driver, asked him where he was bound. "Damfino," said the Black Hiller. "Quartermaster hired me yesterday on the Whitewood and told me to come along; but I reckon he's clean forgot me. I ain't had a thing to do."

In ten minutes X had that wagon loaded up with every kind of horse equipment except blankets; none of them had been left, for the nights were frosty and our men were suffering keenly. An old cavalry officer hailed him on seeing his occupation to inquire what he was doing. "Taking it up," said X. "There's no telling how short I'll be at the end of this campaign."

"Well," said the veteran, "go ahead if it's to cover a shortage; but if you think that by picking up and turning in a few dozen saddles the ordnance people will let you off a few dozen side-lines, you're 'way off. If you were to save them a million dollars' worth of property in ten years' service and come out short a nickel on your own account, they'd grind it out of you; that's my experience."

However, the wagon-load went far to balance the deficit on the Platte, and X was enabled to take up and turn in some thirty-seven curb-bridles at Red Cloud later on; but then teamsters had no special use for curb-bridles, and of all the items which had been stored in the wagons at Goose Creek, curb-bridles seemed to be the only one upon which heavy drafts had not been made.

Now the question was, how to recover those missing articles. At Goose Creek, by the directions of the adjutant-general, the stores had been placed in charge of the wagon-master of the train. X sent for him and he came,—an entirely new man. "Where's ——?" "Him? oh! he was discharged at Reno. Leastwise I've been told so. I didn't come in charge of this train till they got to Laramie." That hope proved delusive. Next day X tried the chief quartermaster. He was all courtesy and business, would do anything. X suggested inspecting the five hundred odd teamsters and taking away every new side-line, lariat, etc. It started in one corral, and an irate regimental quartermaster had it stopped in no time. "He'd got those things himself at Fetterman." By the time the inspectors got to the other corrals nothing was to be found, old or new. Next day came orders to prepare for a new campaign or scout, and once again X spent two days reissuing to the cavalry and receiving their used-up stuff by order. This scout amounted to nothing and was soon over, and, once in at Red

Cloud, X obtained authority to turn in all the stores appertaining to the Big Horn and Yellowstone Expedition.

Several wagon-loads were duly transferred at the magazine, and with all this burden off his mind X gleefully looked at his memoranda only to find himself deep in the mire as ever, for, scattered all over the vast fields of our operations, were quantities of arms, horse equipments, etc., issued to officers, scouts, guides, teamsters, and the like, and no end of blankets, side-lines, lariats, and picket-pins, for which he had no vouchers whatsoever.

Mr. Plodder, of the infantry, who had obligingly assisted him the opening night on the Platte, volunteered an explanation which in very small degree accounted for the shortage in the matter of lariats. "You see, X, so many men came along who wanted a 'halter shank' that night, and if those rope things weren't halter shanks I didn't know what they were." This was by no means consolatory, though a number of cavalry officers appeared to derive an immense amount of fun therefrom.

The expedition broke up at Red Cloud and scattered all over the department. With some six companies of the regiment, X marched into a big post on the Union Pacific. The colonel was East on leave, the major was in command and only waiting for the return of some other field-officers to go on leave himself. An old colonel of cavalry was in command of the post when we arrived, and he was only waiting for our coming to take his departure on the six months' leave then burning in his pocket. War Department orders had made post commanders the ordnance officers of their posts, and as such the old colonel informed our major that all the papers were made out and he was ready to transfer at once. His family were all in New York to sail on the steamer of a certain date, and he must be there to meet them. Our major explained that he too was expecting leave every day, that his colonel would soon be back, etc., but after some skirmishing a result was arrived at satisfactory to them both. Mr. X was hereby appointed ordnance officer of the post, and would relieve Colonel Blank at once. Now X knew very well that War Department orders made post commanders alone the parties responsible for ordnance and ordnance stores. "But," said the major, "the colonel will take charge as soon as he arrives, and, as you see, it is absolutely necessary for Colonel Blank to get away at once." The order was issued, and then came the transfer. In less than a fortnight X had receipted for a whole arsenal.

In an ordinary wooden building, surrounded by equally inflammable quartermaster's and commissary storehouses, were piled tier on tier of boxes containing equipments, infantry and cavalry, of every possible description. Another room of the same size was equally full of arms and ammunition.

"The building is absolutely unfit for the purpose," said X's pre-

decessor. "It has been condemned by a board of survey, and I have represented the great exposure and risk in having so many valuable stores in such a place, but all to no purpose." Everything was in as good order as such a jam could be in a building not more than sixty by twenty-five; and the colonel, in turning over, said to X, "You will find our old ordnance-sergeant one of the most faithful men that ever lived. His word is truth itself."

Just how or why so large an accumulation of stores had been sent to this particular post there was no time to explain. Our own colonel came back in a fortnight. X informed him of the situation, showed him the huge array of stores, daily augmented by fresh arrivals from Rock Island; the colonel pronounced it an imposition, said that if it were intended to make a supply depot of the fort he would insist on having a regular ordnance officer stationed there, and would write at once and make application; which he probably did, for the ordnance officer arrived seventeen months afterwards. "Meantime, Mr. X," said he, "you will continue in charge."

This is how X came to be running an arsenal and adjutant's office at one and the same time. We have seen something of how the latter worked; now for the arsenal.

It became apparent within a few days that the ordnance storehouse of Fort —— was intended as a depot of supply for the entire department of the Platte and a good deal outside of it. How very much easier, simpler, more systematic it was for the commanding officer at Rock Island, with his array of instructed clerks and packers, to ship in bulk, three or four hundred at a time, the various kinds of ordnance stores that might be required on the frontier to the central post of that department! What mattered it to the ordnance department that the labor of unpacking and repacking, distribution, and the infinite clerical labor required should fall upon one already overworked cavalry subaltern and one faithful old sergeant? What mattered it that half the stores thus shipped had to be sent back in smaller lots over much of the road they had traveled in supplying the requisitions from interior posts, thus doubling the cost of transportation? Yet this is exactly what did occur, and for eighteen months the whole work of supplying that large and most needy department fell upon the shoulders of that old sergeant, for never a bit of help did we get except an occasional man to assist in packing or unloading.

All the troops of General Crook's command had been for months in the field, and without exception had to be resupplied company by company. Every day of the week brought requisitions from department headquarters "to be filled from the stores at Fort ——." Every week brought new loads of supplies from Rock Island, and, notwithstanding the fact that we were constantly shipping, by the end of December our storehouse was overflowing. In the item of ammunition there were over

six hundred thousand rounds, and the colonel, alarmed at having such a prospective volcano in our midst, ordered it removed to the magazine.

Being built for the convenience of the post, this magazine had been located exactly a mile and a half away and out on the open prairie. It was a brick shell, with a light roof and heavy door, evidently designed to oppose little resistance to an explosion from within or "prospectors" from without, but while it might be unsafe, the adjutant (acting ordnance officer) was glad to have additional room in the storehouses, where now there were in the neighborhood of a thousand sets of infantry and cavalry equipments. The colonel ordered a guard for the magazine, but after a week of suffering through bleak, wintry, freezing nights the men looked so piteous at the detail for magazine-guard that he took it off. Then it was robbed. A party of citizens from the neighboring town sallied forth one bitter cold night and helped themselves to what they could carry. X tracked them through the snow back to town on the following day, and after some detective work succeeded in securing the arrest of one of the parties who had a lot of the stolen property in his cellar. He was nabbed by the United States marshal and duly tried before a jury of his peers. Just how many of that intelligent jury were concerned in the robbery itself is impossible to say, but the verdict was not guilty; and it may be parenthetically remarked that the verdict of every jury in that enlightened borough in every case where a civilian was arraigned for crimes against the life or property of Uncle Sam's retainers, were it stealing a pistol, running off a horse, or murdering a soldier in cold blood, the verdict was similarly "not guilty."

The guard was again placed over the magazine, duly supplied with a "banked" tent and abundant fuel; then, to make room in the storehouses at the post, we moved some of the arms down to the magazine and were about straightening out the storehouses a second time when the troops commenced drifting in from MacKenzie's winter raid against the Cheyennes, and each command as it arrived deposited a wagon-load or more of used-up saddles, halters, side-lines, lariats, etc., and demanded receipts. In less than three weeks the east storeroom looked like ten junk-shops rolled into one.

Meantime, we got into a row with the depot quartermaster. It usually happened that his wagons arrived with a load of ordnance just as "boots and saddles" was sounding for battalion drill, and the teamsters would come to X for his receipts just as that much badgered ordnance officer, in his capacity as adjutant, was riding forth to form the line. "Mr. X," said the quartermaster, "you keep my men waiting there day after day for several hours, and it's got to be stopped." X tells him by all means to stop it, which doesn't satisfy the quartermaster somehow, and he writes officially to the colonel commanding to complain that his ordnance officer is neglecting his business and obstructing the public service by detaining quartermaster teams. The colonel knows

perfectly well that his adjutant is "on the jump" from daybreak until —well, he doesn't begin to know how long, but all the morning at any rate, yet he summons him to hear what the quartermaster's complaints are. X suggests that a good way out of it would be to relieve him from duty as ordnance officer and put some one in who could devote twenty hours out of twenty-four to the matter. The colonel again concludes that it is an imposition, and decides to write another letter requesting the detail of a regular ordnance officer, X meantime to remain in charge and do the best he can.

All this time there is that back business of the Big Horn expedition to settle up, and X is writing letters all over the country to officers who were connected therewith, in the desperately hopeless undertaking of getting possession of or receipts for the arms and equipments issued during the campaign to all manner of people, who were not to be found at Red Cloud and Laramie when we dissolved. It was a fortune in postage-stamps and time, but month by month the accountability was lessened, and X began to feel vaguely encouraged. One day it transpired that a discharged soldier had a new calibre 45 rifle. He was overhauled and questioned as to how he obtained it, and frankly stated that he had bought it from Pepper. This was a bombshell in the camp. Next it transpired that Pepper had forged his colonel's name to an application for his (Pepper's) discharge, on the ground of habitual intemperance, and Pepper, who had been under guard, was remanded to closer confinement, with a sentinel to accompany every movement of his outside the guard-house. Next, Pepper skipped away from the sentinel, and from that time to this has succeeded in evading recapture. The sentinel was tried by general court, but proved that he fired seven shots at the retreating form of Pepper, who could run like a deer, and the court was satisfied.

Then, in the dead of night, some miscreants ran a wagon up to the storehouses, effected an entrance into the quartermaster's shanty and broke through the partition between that and the ordnance-rooms, and loaded up with such things as they could lay hands on. They were evidently in search of ammunition, and evidently too disturbed and hurried in their search, for they mistook boxes of picket-pins for metallic cartridges, and hauled off several boxes of those useless pegs. It was some comfort to X to reflect how they must have sworn when they discovered their blunder. "Where was your sentinel?" we hear some stalwart exclaim. Bless your heart, sir, he was right there, if his statement could be believed; but then, you see, he was guarding a huge coal-shed, a commissary storehouse, two quartermasters' storehouses, a saddler's shop, and some few loads of hay, and the night was dark as pitch. "He didn't see nor hear nuthin'." Neither did the other two.

Boards of survey were running, three or four at a time, all that winter. They relieved X. So did the department commander, and

so eventually did the ordnance department; but not without a kick or two.

Once X was ordered to "take up" again certain items which a board of survey had recommended that he be authorized, and that the department commander had authorized him, to drop, because, said the chief of ordnance, it is not shown that the responsible officer exercised proper vigilance to prevent loss. This was embarrassing, but eventually the bureau yielded the point, "under the circumstances," and the items remained dropped.

Spring came, so did the summer of '77, and all this time stores were coming too, and, in smaller parcels, going day after day, but no sign of relief was manifest. In July the great railroad riots took place, and the colonel was ordered eastward by first train to assume command of the troops collecting at an important point, and the colonel ordered his adjutant to go with him. So, with parting injunctions to the faithful old sergeant to take charge in his absence, and have Captain Curbit sign all invoices "for Lieutenant X," the ordnance officer turned his back on more than a fortune in stores, rushed off with his chief, and was gone three weeks. Returning and finding everything working smoothly, thanks to the ceaseless care and attention of his invaluable ally, the sergeant, he returned to his work of straightening out the Big Horn papers, when again came telegraphic orders sending colonel and everybody into the far Northwest, by first train, after the Nez Perces. Once more the spectacle was presented of the ordnance officer abandoning his thousands and thousands of dollars' worth of stores in obedience to his orders, trusting everything to Providence and that crown-jewel of a sergeant, and this time he was gone three months. How *could* a man in the Yellowstone Park be held responsible for property in Southern Wyoming? "He should have transferred it before starting," your critic says. My pragmatical friend, it took a month to transfer that property when the transfer was made, and Mr. X was ordered to leave "on first train." "Then he oughtn't to have been appointed in the first place." That is precisely our opinion. Moreover, we thought from beginning to end of that business that the ordnance department, in establishing that great magazine in the centre of the scene of Indian operations in '76, should have decorated it with one of its own officers and a squad of assistants to back him.

Of course there were some comical features in our experience. One of the liveliest cavalrymen in the department was the gallant captain of the gray troop of the Second Cavalry. He and his men were always out scouting somewhere, and it so happened that in the summer of 1877 he had a mixed armament of Colt's and Smith & Wesson revolvers in his troop. A short time previous X had been ordered to send him five thousand rounds of *Colt's* revolver ball-cartridges, and did so. One blissful June morning the telegraph operator at the post

darted in to X with a dispatch from the chief ordnance officer at Omaha. "Captain Egan reports that the cartridges you sent him will not fit his pistols. What's the matter?" Ten minutes after came another from "Teddy" himself: "Cannot use the cartridges; all too long." Then in came the colonel with a dispatch from department headquarters, and a perturbed expression on his face. "Mr. X, what is the matter with the cartridges sent Captain Egan? The adjutant-general is after us with a sharp stick."

X meantime has summoned the ordnance-sergeant, and that veteran glances over the papers and explains the matter in a dozen words. "He's been trying to use Colt's revolver cartridges in his Smith & Wesson's, sir," and so it proved. The "revolver ball-cartridge" is made to fit both the Colt and the Smith & Wesson, whereas the "Colt's revolver ball-cartridge" can be used only in the Colt. This information was telegraphed at once to the captain in the field and the explanation wired to Omaha, but meantime headquarters had been racked to its foundation at a discovery of so alarming a nature. Dispatches had been sent all over the country to cavalry company commanders directing them to test their cartridges in Smith & Wesson pistols and report, and notwithstanding our explanation an aid-de-camp was hurried out to investigate; he arrived next day, looked at the two pistols and two styles of cartridges, remarked that it reminded him of the profound philosopher who had two holes cut in his door for his cats, a big hole for the big cat and a little hole for the other, and went back to Omaha. Shortly afterwards all Smith & Wesson pistols were called in and none but Colt's issued.

We were constantly in receipt of telegraphic orders to ship stores at once to all manner of remote posts. One morning early came two dispatches: the first saying, "Ship *by express*, first train, to commanding officer Company ——, Second Cavalry," so many carbines, slings, belts, pouches, etc., and half an hour afterwards a similar message to send just about the same things to the commanding officer of another company, in all comprising arms, ammunition, and equipments for some fifty men. Mr. X and his sergeant pitched in with vim, an orderly was hurried down to the depot to secure the co-operation of the quartermaster's teams and the express company, and by noon, when the Union Pacific train rolled in from the East, the packing-boxes were at the station to meet it. The proper invoices and receipts went with the property and others by mail to the designated officers, but the end of the quarter came and brought no receipts whatever. X wrote to the company commanders, then 'way up near the Wind River Valley, and requested that they be sent at once. One of them replied that he didn't get more than half the things specified in the invoice, and the other said pretty much the same thing, only worse. This wouldn't do by any means. X knew that every item on the invoice was in those

boxes, and so retorted. Then it transpired that the stores were required to arm and equip a lot of recruits going up to join those companies under command of a lieutenant who had opened the boxes and distributed the arms, etc., on the railroad. X, therefore, sent him invoices and requested that he receipt, and by and by came the reply, "I'm not responsible for the stores at all. They were not invoiced to me. I simply took them to arm my recruits." And then the gentleman obligingly went on, "What you want to do is to make out certified invoices and send them in with your papers, etc., if they (company commanders) will not receipt." X could not see that point at all, and demanded that the officer who took the responsibility of opening and distributing should sign the receipts, but it was six months afterwards before they came, and then only on compulsion.

At last, seventeen months after Mr. X was placed temporarily in charge of those ordnance stores, all the real work having been completed, Indian campaigning being virtually over in the department of the Platte, all the troops having been supplied with new equipments to replace those worn out in service, and the lull in business was enabling the ordnance sergeant to commence "straightening out" the contents of the storehouse, the long expected official of the ordnance department put in his appearance, and soon after him came the squad of assistants, clerical and otherwise, without which no well-regulated ordnance establishment can be conducted, but which we were compelled to do without. The transfer of property commenced without delay, and in the course of six weeks Mr. X stood relieved. He was behind in only one item of any consequence, and 'way ahead on general average. It is needless to say that the shortage stands charged against him, while there is nothing to his credit.

Now we are painfully conscious that in all this long account of an experience as acting ordnance officer there is nothing entertaining or lively; it is as solemn as a sepulchre, but so was the experience. We are portraying trials and tribulations, and from its inception to the still indefinite end this has been all vexation of spirit. We look back over those massive monuments of retained papers, and wonder how we ever dared go to sleep. We recall the constant, the incessant round of duties required of the adjutant from reveille until tattoo, attending morning and evening stables, and all drills, besides his office and parade duties, and wonder what a genuine ordnance officer would have said and done under the circumstances. We recall the issue of stores "on memorandum receipt" under the peaks of the Big Horn and the pines of the Black Hills, and wonder why no ordnance officer was sent with Crook's command. We met one with Terry on the Yellowstone, but he was only out to see how the equipments worked in the field, had no property responsibilities, and was as free from care and as buoyant as a cork; but then Terry's people were housed in comfort, had carpets and

barrels of bottled ale in their tents, and could support an ordnance officer, but we poor devils had neither tent nor change of raiment, and hard tack and bacon were the daily bread of officers and men until we had to come down to horse-meat. Looking back at the depot in charge of which we so unluckily stumbled, and compiling from our papers some figures of the work done, we find that, beside the incalculable worry over minor trifles, we had handled before the arrival of our relief the quantity of ordnance and stores tabled herewith:

	Received.	Distributed.
Rounds of ammunition	1,550,000	1,054,015
Rifles and carbines	2,304	1,116
Revolvers	1,754	755
Sabres	1,664	728
Infantry equipments	1,543	1,351
Cartridge-boxes and pouches	2,565	896
Holsters	1,806	1,146
Haversacks	2,000	873
Bridles	3,082	1,979
Halters and straps	1,911	1,796
Lariats	2,301	2,290
Nose-bags	1,300	672
Saddles	1,069	962
Surcingles	1,264	1,082
Saddle-blankets	1,799	1,776
Side-lines	2,400	2,184

We may be in error, but are constrained to the belief that in that table alone the amount of stores is not so trivial as to be beneath the dignity of the ordnance officer *de jure*, and we are confessedly so pig-headed that to this day we cannot be brought to see the propriety or justice of picking out a cavalry adjutant, requiring him to attend to every item of his own duty in garrison or in the field, and yet to control and become pecuniarily responsible for such an array of ordnance work and ordnance stores as that.

X.

NAVAL APPRENTICES.

In April, 1875, the Navy Department issued a circular relating to the enlistment of boys for the naval service. Under the provisions of acts of Congress, a limited number of boys from sixteen to eighteen years of age were to be shipped to serve in the navy until the age of twenty-one. Their training was to comprise the elements of an English education, alternating with seamanship and other professional occupations, to prepare them to act as sailors in the service.

Our government had made two previous attempts to provide a source of supply for the crews of national vessels. In 1837 an act of Congress authorized the enlistment of boys on certain men-of-war for training as seamen, and in 1864 the scheme, long dormant, was revived on board the "Sabine." Both efforts resulted in failure. In the first case the law provided for the enlistment of only a few boys on each cruiser. The number of recruits on any given vessel was too small to insure results that would be felt throughout the service, or it was perhaps impossible, on an ordinary cruise, to give the special attention needed. At all events, the boys on board of each ship drifted promptly into the position of general drudges, and no organized effort was made to improve them. In 1843 enlistments of this sort were discontinued.

The commissioning of the "Sabine" as an apprentice-ship, by concentrating the whole work of training at one point, was a step in the right direction. But the good that the ship might have done was neutralized by the provision which entitled her to furnish annually a certain number of cadets for the Naval Academy. Existing laws already provide that each section of the country shall be represented at the school for naval officers; if any reform is desired in that direction, it can be remedied by appropriate legislation. It may be noted that France, Germany, and our own force of naval engineers allow all native-born boys of good moral character to be candidates for admission to the school of future officers, certain limits of age being observed. No government, however, admits that education for duties before the mast and on the quarter-deck can start from the same point, though certain points of technical knowledge must be common to officers and men. We find this distinction as sharply defined in civil life, wherever the profession is of a technical or practical kind. Our archi-

tects and engineers on shore are brought up differently, begin earlier, and go much farther in their mental work than the carpenters and mechanics who carry out their plans. The workman, in elementary, practical handicraft, will be equal or superior to the designer; but the latter takes a natural lead because his education is of a higher order than the subordinate could acquire. So it is in our naval service. We should make access to either preparatory course as free as possible to all comers, but, from the educational point of view, the boys must perforce be as different as the duties they will have to perform.

In the case under consideration, the attempt to assimilate the early training proved a total failure. Few candidates from the "Sabine" ever succeeded in entering the Naval Academy, still fewer graduated. Of the latter there is hardly one who would not have been better qualified and taken a higher standing had his year on the training-ship been spent ashore at school. The "Sabine" soon contained a majority of boys whose avowed object was to become candidates for the Naval Academy. The successful few went forward in time for examination, the disappointed ones obtained their discharges or deserted. The system, overburdened with a provision so foreign to its real purpose, collapsed. A handful of the original "Sabines" who joined to become seamen remain in the service to show what the act of Congress could have accomplished without its rider, and to make us wish for more men like them.

The general tendency of the service is to set its face against new methods, especially when a trial of their merits has resulted in failure. But it may readily be shown why our need of good men was so great as to call for a renewal of training work in spite of the "Sabine" fizzle.

Even before the war our merchant service did not furnish enough recruits to supply the wants of the navy. The rapid growth of our maritime commerce absorbed most of the youth who adopted a seafaring life, the government making no adequate provision for their reception in the service. "Once a man-of-warsman always one," is a saying that may be matched by a like description of merchant sailors. Both classes remain true to their vocations as originally selected, and rarely enter the sister service for consecutive cruises. During the civil war, it is true, we drew our complements largely from the merchant service, and, having no serious naval force to oppose us, there was, luckily, time to bring these levies into shape before the actions in which they made their glorious record. But to-day this source of supply, temporary at best, can no longer be relied upon. Our merchant flag has all but vanished from the high seas, and with it, as a palpable unit, the great body of American sailors. Since the war our force of enlisted men has suffered a steady deterioration. The survivors of the rebellion, as they retired, left no worthy successors. Improvements in the pay and treatment of men retain but a few of the older element still capable of service, or only here and there attract individuals of a good type. The

majority of our crews are foreigners, recruited from every nationality. The character of this foreign element is rarely of the best, too often of the very worst. Such recruits, unfair specimens of their countries, as a rule care nothing for the flag under which they ship, and often disgrace it and the vessel on which they serve by abusing their privileges while on shore. Their interest in our country begins and ends at the paymaster's office. Their best service to our navy is rendered when they leave it. Every ship has some good men, Americans or foreigners, but merely because they are the respectable part of the crew, they often fill offices for which they are totally unqualified,—offices which should be held by seamen thoroughly at home in the duties of their stations. A small naval force like ours, liable at any time to receive enormous expansion for aggression or defense, should be as perfect in all its working parts as it can be made, perfect especially in its rank and file and leading men. This brings us to the true necessity for our training system, the enlistment of boys for man-of-war training and the subsequent choice, development, and *retention* of the best men as petty officers.

England, France, Germany, and Italy devote their most earnest efforts to the selection and improvement of their petty leaders afloat and ashore; but a fair equivalent for the French *sous-officier* or the British sergeant and seaman gunner belongs to a class that our navy alone has failed to produce and encourage.

Let civilians imagine a force of factory hands (a motley one at that) without foremen, a gang of workmen picked up at hazard and destitute of bosses or section-men, and they have precisely the condition of affairs which exists in our naval service.

Occasionally a naval vessel, by good fortune and through the exertions of her executive, may be found to contain a fair number of native or naturalized Americans in her crew, men who have some interest in their ship, some national pride in its efficiency and good discipline. Such ships on any station form a striking contrast to less fortunate vessels with their mongrel complements. But no systematic effort has been made for many years to render our navy a distinctly national institution, to give it a steady working force of national seamen, and to provide for the best men offices which they may fill with credit to themselves and with profit to the country.

Lieutenant-Commander Chadwick, U.S.N., has published, in volume vi. of the Naval Institute Papers, a valuable report upon the measures adopted by foreign powers to secure crews for their men-of-war, and he points the way to our own success if we but choose to follow it. Great Britain has, since 1862, ceased to rely upon her great commercial marine for recruits or petty officers in time of war. Her training system now sends forth annually over two thousand boys fitted for service in the fleet. France keeps up a still larger force of recruits

undergoing instruction for sea service. Germany undertakes a special education of some four hundred boys to supply petty and warrant officers alone, their course lasting for three years. Observe that in the latter countries military (*qua* naval) service is obligatory upon all male citizens, so that a sufficient supply of defenders is assured in point of numbers. But foreign governments appreciate the danger of relying upon the mere number of recruits available in time of war, be they seamen by profession or not.

Our people and press, so indifferent to military subjects in time of peace, so exacting and critical in time of war, have lately been compelled to learn what an insignificant barrier our navy opposes to foreign aggression. Thanks to THE UNITED SERVICE, the Naval Institute Reports, and similar means, naval officers of all branches have showed our deficiencies, our rotten cruisers, obsolete guns, and defective construction with a persistence that has commanded attention and secured partial reform. We now solicit attention to our *personnel* as well. Raw levies, however brave and seamanlike, will contend at fearful odds against disciplined forces if we unhappily become involved in a war with any naval power. In a sudden emergency we may trust the nation to waste its millions in the tardy purchase of vessels and guns, but we have no modern chieftain whose iron heel will call forth the trained warriors to man them.

The First Lord of the Admiralty recently stated in Parliament (*Times*, March 9, 1880) that, taking into account the waste in training, two thousand two hundred boys turned out annually from the training-ships would keep up a force of twenty-one thousand seamen in Her Majesty's navy. Our naval estimates for the year ending June, 1880, provide for a total force of seven thousand five hundred enlisted and appointed men. Of these, barely six thousand may be classed as fighting seamen or men of the Engineers force. The seven hundred and fifty boys whose enlistment is now authorized should be sufficient to supply our present needs; but the number undergoing instruction in training-ships should not be reduced below five hundred for the present, on account of any excess above the total of seven hundred and fifty in active service on regular cruisers.

There are now four vessels engaged in the work of training,—the "Minnesota," an old steam frigate of three thousand tons; the "Constitution," a frigate of thirteen hundred and thirty tons; the "Saratoga" and "Portsmouth," corvettes of about eight hundred tons each. The first-named vessel is totally unfit to cruise as a training-ship, and the same may be said of the "Constitution," unless her spars and sails could be materially reduced. Both are much too heavy to be properly handled by the boys. The regular sea-going complement of these two ships comprises a greater number of men than we now have boys under instruction.

On these vessels the recruits in working ship are taxed beyond their strength, and the work assigned them is greater than would be done by grown men in regular cruisers. The "Supply" (five hundred and fifty tons) and other small vessels would be useful additions to the list of training-cruisers.

In January, 1880, there were on board the several training-ships: "Minnesota," 136 boys; "Constitution," 152 boys; "Saratoga," 155 boys; "Portsmouth," 176 boys; a total of 619 boys.

In fitting out these vessels for training service the Navy Department has done what it could with existing materials to avail itself of the privileges conferred by the act of 1875. We do not hesitate to say that the means now supplied are totally inadequate for the purpose; we can get much better results by modifying the course which we are compelled to pursue with our present resources.

The book of regulations for the training service provides for a course of work in various drills and studies; then for the practice of seamanship on cruising-tenders. The pressing need of recruits on service-cruisers, the lack of a suitable base of operations, and other causes, have been mentioned as reasons for departing from the original plan; at any rate, we do not adhere to it. All the training-ships cruise more or less, and are allowed to recruit. At all seasons drafts of boys of certain classes, or all who have been shipped for a given length of time, are withdrawn from training to be sent to general service. The vessel whose work is thus interrupted, and whose cruise will be otherwise cut short from lack of boys to handle her, swoops down with a requisition upon one of her consorts and secures a sufficient number of recruits to keep up the semblance of a complement. These irregular transfers occur with little regard to preliminary instruction, and as matters of immediate necessity. The greenest of recruits are sent from ship to ship and hustled off to sea, roughing it out as best they may with other boys in every stage of training. With such changes, the time of enlistment or the fitness of the recruit for sea work can receive but scanty consideration. We then find no one vessel doing the important preliminary work, but each ship containing its quota of raw material. In their new life their daily labors in handling the ship alone keep these boys on deck for twelve hours out of twenty-four. They must participate in at least one general daily drill, and, besides, undergo the most tedious of all instruction, the special work for beginners, in half a dozen different elements of their profession. They must find time, besides, to look out for their personal neatness and for making and repairing their clothes, their notions of these matters being usually of the vaguest kind. To complete this list of requirements, our new recruit has the certainty of being kept under close restriction to the ship for the first half-year to work off his indebtedness for outfit. This measure effectually cuts him off from any privileges he might expect for good conduct

and application under rather adverse circumstances. The novelty of the life at sea soon wears off, since we favor it with every possible point of friction; the boy seeks his discharge or a convenient chance to desert, and thus applies for his own benefit intelligence that might have been useful to the service if properly directed.

We cannot expect any great improvement under the present plan as long as green boys are sent to sea without previous drill. If we make their training the important work of the ship, the instruction of the more advanced boys is correspondingly neglected. If the recruits must take their chances of learning by joining in the general drills of older boys, they are taken beyond their depth, and derive little permanent benefit from what is going on. Assume the labor divided and drills graded to different capacities, and we find the boys even then doing more work than we expect in service from full-grown seamen. Our present method might, on board a whaler, qualify the green hand for later work at the steering-oar, but it will not produce a proper percentage of good men-of-warsmen from the recruits now accepted. Their work goes on after a fashion, and a number of boys fairly instructed, if they escape drafting ahead of their proper time, finally reach the service. But the results are insignificant as compared to what might be done if all training-ships went to sea with boys who knew their elementary drill work and were able to take care of their clothing and themselves. Foreign training methods agree in giving the recruit his first instruction on shore or aboard stationary vessels before transfer to cruising-tenders. The cruiser, manned and handled by a scanty complement of boys, affords no proper time or place for imparting the first notions of personal order and discipline and the elements of the profession which make the naval seaman a trained fighting unit. Our own regulations on the subject require tenders to confine their routine of drill to exercises in seamanship, which are sufficiently important and arduous to deserve exclusive attention. We have trusted so far to the individual working of single vessels, each striving to combine all branches of instruction in its own course of operations. The method has done good service in showing that even under adverse circumstances boys can be enlisted and some rendered useful to the service. Let the tenders now be relieved from their double work, of which neither part can be thoroughly performed, and confine their share of the training to its legitimate sphere as working parts of one general plan.

The present friendly rivalry among the tenders will serve a better purpose when all start with proper *personnel* and carry out the duty reserved exclusively for them. Let this duty be defined and superintended by a chief of the training service selected to control the entire work. His station should be the central point of the system, the main rendezvous and preparatory school of instruction for all recruits enlisted as naval apprentices. The course first adopted may prove defec-

tive in some of its features, but when once established it will afford some groundwork to build upon. In any event it will be an improvement upon the present plan of having no system at all. At the start we may borrow from foreign experience the points upon which all agree, and trust to the direct control of our superintendent for necessary improvements and their prompt application.

Moreover, at this central station we may assemble our young seamen for special gunnery and other instruction between their cruises and for the selection of our petty officers and leading men.

In choosing the site for our proposed central station, several considerations should govern. We need convenience of access to the cities of the seaboard where our naval rendezvous are located, enough land for the erection of drill-sheds, a gymnasium, and school-rooms, and for drill and recreation-grounds. We need good depth of water, facilities for target practice, a secure anchorage for the tenders, and ample room for manœuvring vessels under sail. We should avoid strong tide-ways that would interfere with boat-drills. Sanitary considerations should have due weight, and conditions of climate should not be overlooked.

We cordially agree with Lieutenant-Commander Chadwick in his recommendation of Narragansett Bay as fulfilling the requisite conditions. Buzzard's Bay or Gardiner's Bay might afford a site if none could be obtained in the former waters.

The Chesapeake, near Annapolis, might answer our purpose, but the climate would not be so suitable, and the distance is too great from New York, Boston, and the eastern seaboard, which may be expected to furnish our best recruits.

Coaster's Harbor Island, near Newport, and in close proximity to the torpedo school, would meet every requirement, and seems the best locality yet suggested. Inquiries looking to its acquisition by the government for use as a training-station have met with encouraging reception, and its cession could probably be secured if the spot were finally selected.

We should require at the central station at least one large vessel for great-gun drill, fitted with light spars and monkey-yards for seamanship exercises. Hulks would furnish quarters for the recruits and seamen in training, but it would be better to erect barracks ashore, at least for the recruits. This would avoid herding them aboard ship in the first part of their training, where the separation of classes cannot be so readily accomplished. It would be better, also, for the purposes of study and for the supervision of the recruits until they know enough to look out for themselves in the narrower limits on shipboard. It also gives them more time for their work. France and Germany both favor the barrack system on account of the greater facilities afforded. Coaster's Harbor Island possesses buildings which would answer the purpose, and which could be used if the government obtained the cession of the island.

The station should possess a plentiful supply of boats of all models used in service; also, if possible, a fore-and-aft vessel and one brig or small bark for short exercises in adjacent waters. On shore there should be study-rooms, a drill-shed for cutlass drill, which might be used as a gymnasium, also a suitable room for working-models of such parts of ships and their equipment as experience may suggest. A rigging and sail-loft and facilities for bathing and swimming instruction should also be available.

The grounds should furnish room for the drill of naval howitzers, for exercise of landing-parties and the manœuvres of the naval brigade. The records of service performed by the navy of late years show that vessels are often called upon while in port to furnish protection for American residents and their property on shore. Preparations for such duty, our most important military work in time of peace, can only be adequately made when some provision exists for practice on land.

The detail of officers and men for the training-station and its tenders should be of the best. The superintendent and commanders of vessels should be afforded every facility for selecting the men they require, and their wishes consulted as far as possible in regard to their subordinate officers. The work to be done is not attempted for the benefit of any special bureau, corps, or ship, or to make the reputation of any individual. It affects the efficiency of the whole service; its general support should be in keeping with the object we propose to attain. The complement of officers now required for the tenders alone will very nearly suffice both for the tenders and the work at the depot. The lack in our service of good men for petty officers may cause some inconvenience at first, but it can be remedied by a slight increase in the working staff of junior officers until the system has had time to produce its own assistants. The men attached to the station should be quartered on the ships and be responsible for their routine work. Schoolmasters, corporals, and others who have the immediate superintendence of the recruits, should live with them.

Enlistments for the training service should be made at the central station, at the various naval rendezvous, and by the tenders on their return to the station. A printed form should be supplied to the parents of the recruit and to the recruit himself, setting forth succinctly the character of the work expected and the chances and conditions of advancement. This precaution is rendered necessary to avoid the gross misapprehensions under which many recruits have entered the service, especially at points distant from the seaboard.

Recruiting-officers should be supplied with a form of inquiry to be addressed by them to the police or local authorities, requesting information as to the moral standing of the proposed recruit. Unsatisfactory answers should insure rejection. The government can get all the boys required without converting the training-station and tenders into houses

of refuge or juvenile reformatories. The present limits of age could be retained, but no term of enlistment should be for less than four years and a half. This would allow for fifteen months of training, a full three years' cruise in the regular service, and for ordinary delays in effecting transfers. There is no good reason for limiting enlistments to any specified time of year, provided we possess a central station and also a regulation forbidding the transfer of boys until they have completed a certain course. By having at hand boys of all classes the system will at any time be prepared to fill drafts for the service. There will be no season of the year when the awkward squad will become so large as to be unmanageable, and when individuals lose their share of the instructor's personal attention that they secure if fewer in number. Moreover, if all the boys were to reach their final point of training together, many would be kept at the depot longer than needed, waiting a chance for sea-service. Recruits upon arriving at the central station should be placed under the direct supervision of the most reliable officers and men connected with the depot. They should constitute for three or four months a mess and organization apart from the principal force. Each recruit should receive his outfit, plainly marked, and be held to strict account for its neatness and the care of his person.

The outfit question, like the establishment of the central station, involves a certain national outlay and should have careful consideration. The minimum outfit required for the enlisted man or boy comprises, at current prices,—

One blue shirt	$3.00	One silk handkerchief	$1.00
One pair blue pants	5.25	Two cap-ribbons	.70
Two undershirts	3.30	One pea-coat	10.50
Two pairs drawers	3.40	One suit rain-clothes	2.25
Three pairs socks	.90	One mattress } Two mattress-covers }	5.75
One pair shoes	2.45	One pair blankets	6.24
Three working-suits	3.75	One blacking-brush	.35
Two caps	1.80	One scrubbing-brush	.25
Two white cap-covers	.40	One comb	.37
One bar soap	.15	One pot, pan, and spoon	.18
Two towels	.50	One jack-knife	.30
One wisp-broom	.16	Sewing-kit	.73
One box blacking	.06		

—a total of $53.74.

Bag for clothes, hammock, and ditty-bag are supplied by the government. In all foreign services, in our own army, and even in our own marine corps aboard ship, the man is supplied with his original outfit free of charge, or is credited with a certain fixed sum for clothing money. Our navy alone compels the recruit to have certain articles of prescribed pattern, and restricts him to the ship until his pay equals the debt incurred. The unfairness of this arrangement has been urged again and again by naval officers. Successive administrations have

represented to Congress the necessity of remedying this crying evil. Our landsmen (the lowest grade in the service pay-roll) contribute their first three months' pay to cancel this debt. The enlisted boy, paid originally nine dollars and fifty cents per month, requires the same outfit as a landsman or seaman, and his restriction extends through the first half-year of his enlistment. The principle involved would not obtain on shore, whatever government may accomplish in this line. No individual would expect an employé to wear a specified uniform or livery, pay its total cost from a limited pay, and confine him within certain limits until the wages cover the outlay.

The sum of twenty-five thousand dollars per annum would provide nearly five hundred boys with their complete outfit. If the government cannot bear the total cost of this reform, the boy upon entering, or after three months' service, might receive a credit of clothing money equal to half the original cost of outfit. His pay reduced one dollar a month for the first year would further diminish the actual grant to almost one-fourth of the total cost of equipment. Similar provisions should apply to all enlistments for the general service.

We urge reform in this matter as having great weight in the success of our enlistments, and on the higher ground of ordinary fair dealing. By treating the question in a liberal spirit we remove a feature of justifiable discontent and a fruitful cause of desertion. The training system should tend to elevate the *morale* of our enlisted men. We make but a sorry beginning when we convert the recruits' first home aboard ship into a floating debtors' prison.

The present regulations for training-ships will afford a tentative programme for the course of instruction at the station. Under its provisions work might be divided as follows:

1st. Special course for recruits, to last at least three months: Seamanship, names of standing and running rigging, of sails, spars, and parts of ship, knotting and splicing; daily exercise in going aloft, loosing and furling monkey sails, rowing and sailing boats; gunnery, nomenclature of gun and carriage, gun numbers, stations and arms; cutlass drill; setting up and school of the soldier, manual of small-arms; artillery, manual of the piece, and school of the cannonier.

In addition to the above, instruction in sewing, and in elementary studies,—reading, writing, and arithmetic.

2d. Course for boys who conclude the shore training before service in the tenders: Seamanship, lead and compass, signal drill, exercise with light yards, reefing and hoisting of monkey topsail, bending and unbending sail, boat drill under oars and sail daily; gunnery, broadside drill, cutlass and pistol drill; infantry, school of the company and skirmish drill, target practice with small-arms; artillery, howitzer, afloat and ashore, target practice; studies, sewing and gymnastics continued; instruction in swimming.

3d. Course for boys whose time at the station is interrupted by the cruise in tenders: Seamanship, cruises in the brig, up and down light yards and masts, work in model-room, also in sail- and rigging-loft. Their general course in other work to be that of the former class, for which they should furnish the petty leadership required, taking the higher numbers and stations in general drills where both classes work together. Finally, provision should be made for boys who have finished their training and await transfer to service cruisers. They could be advanced in all exercises to such a point as the limits of time may permit. The best of them could be advanced chiefly in branches for which they show some decided talent; less promising boys awaiting transfer would do more of their work with the class below. Two hours on Wednesday and Saturday afternoons should be devoted by all classes to extra drill for the most backward recruits, and to special instruction for the most proficient in each branch, the remainder of the afternoon being given, as by present regulations, on Wednesday to sewing, and on Saturday to recreation. Familiarity with the boatswain's call and bugle should be attained and instruction given in the use of the bugle. Gymnastic exercises should be frequent, and the boys encouraged to make the most of athletic sports in their hours of recreation. A library should be provided for recreation time that cannot be spent in the gymnasium or out of doors.

In all exercises the prevailing idea should be to have the details thoroughly understood and mastered before making their general application. We substitute for our present lee gangway drill, with overworked recruits, scanty room, and inadequate facilities, a system of drills with squads that can be handled and each individual thoroughly instructed, beginning at the very lowest grade.

We want in the service men acquainted with their duties and able to assist by precept and example in the instruction of others on some uniform plan. We can get such men, as other trades obtain them, only by having them trained from boyhood to know, first, the elements of their duty, then its general performance. The technical knowledge of our recruits should be as perfect as intelligent direction can make it.

Drills should be performed in silence, and neat, thorough execution insisted upon. After attaining proficiency in detail work, we may introduce such quick working as may be consistent with the requirements of the service.

Rule out the vicious system of holding a time-piece over the performance of each evolution, or having so-called "competitive drills." Substitute for it the adoption of double time as the regular step for the recruit when called upon for work. The boy who is taught to move with life for duty about the decks will not be the last man to reach the weather-earing when it comes his turn to pass it.

Recruits should be kept in the training course for fifteen months,

spending about eight months of their time on shore and seven months on the tenders. With a central station and barracks ashore, there will be an amount of time available for elementary work, even in seamanship duties, that cannot be secured while man-of-war routine labors claim part of the days. With eight hours available daily for alternate study and drill, the boys will soon reach a physical and mental proficiency that should render them ready for life on the tenders.

Of these, half should cruise from October to April, the other half from April to October. Officers and crews of the tenders, when not cruising, should be at the station conducting the instruction there.

The system being supposed to be in working order, the first cruise, commencing in April, should take out recruits shipped from September 1 to December 31 of the previous year. They should fit the vessel for sea, and their instructors as a body should accompany them. They sail upon the return of the winter cruisers. The first fortnight of the cruise could be spent in the adjacent bays in getting the ship's company into shape and for general drill. The principal part of the time should comprise as much sea work as possible. On the return voyage, some days might be spent in our home ports, where the workings of the system could be seen by the public, and enlistments effected for transfer to the central station.

The tenders will then be dismantled by their crews, who report at the station, some ready for transfer, others to finish their course under their previous instructors. Upon the return of the summer cruisers, the other set of tenders will put to sea with recruits shipped from the previous January to July, together with the officers engaged in their instruction. Recruits shipped for less than four months remain in all cases at the station. While cruising, the gunnery work should be reduced to a minimum, except in the matter of target practice. Seamanship exercises should claim all the attention possible, in addition to the watch and routine duty of a man-of-war.

Ratings should be given in accordance with specified standards of requirement, practical skill being the essential point considered. All being shipped as third-class boys, the standard adopted should enable a good worker to get his rate as second-class boy after the first six months, but second-class boys who have not made part of a cruise to be liable to reduction if their service afloat does not justify the previous appointment. Examination for first-class boys should occur after one year's enlistment, and all except the very best should be transferred with that rate to regular cruisers. The most promising boys might be made ordinary seamen, second class, which should be the highest rate available before their experience in actual service.

The British training system does not canvass the merits of recruits for special work until after their first regular cruise. The French, on the other hand, divide their recruits almost immediately, train some as

gunners, others as topmen, others as quartermasters, carpenters, buglers, etc. We might strike a happy mean between these radical differences by providing when the boy leaves the lowest grade for special instruction in his best work, wherever it will not interfere with the general course. We thus establish a nucleus for our future boatswains', carpenters', and gunners' gangs, buglers, signal men, etc., who will get their best experience in general service, but whose bent is encouraged from the start.

There are frequent occasions on every man-of-war when the regular forces of the sail-maker, gunner, and carpenter are supplemented by details from the watch, or when the boatswain has some special work in which the "hand from each part of the ship" is detailed to assist. Apprentices transferred to service with suitable recommendations should be detailed to answer these calls whenever it can be done without impairing their efficiency as good general service men. These privileges, judiciously bestowed, will in time bring their own reward to the service at large, and contribute materially to the success of the training system.

Recruits drafted to general service after their fifteen months' work should give a good account of themselves, if we may judge by the results now obtained with inferior means of training. They should form an appreciable part of a cruiser's complement, in justice to the system and to themselves. The success of the plan depends upon its reception in the general service, and judgment cannot be fairly passed upon it unless its workings are seen with a respectable number of apprentices. Moreover, if we supply the boys in driblets to the service we repeat the mistake of forty years ago, and may expect a similar failure.

We may now assume the boy transferred to his first service experience, and consider a subject coequal in importance with his early training,—namely, the improvement of the men and the selection of petty officers. Apprentices who have completed their first regular cruise and apply for re-enlistment under a continuous-service certificate should be sent from the rendezvous to the central station for instruction. If located in Narragansett Bay, the station will be accessible from the rendezvous at Norfolk, Philadelphia, New York, and Boston by cheap water-route. The cost of such transfers would be a consideration, so would the increased efficiency of drafts sent fully drilled and equipped as a body from the central station to ships going into commission. Such drafts, substituted for the riff-raff picked up from the present receiving-ships, would save months of annoyance and drudgery in the early part of a cruise, and provide, from the start, an easily organized and disciplined force of men. The course for young seamen and ordinary seamen, on their first re-enlistment, should last at least two months; their instruction should comprise general drills at ordinary service exercise, instruction in gunnery, and the development of any special aptitude

that the man may display. Their gunnery-ship, like the British "Excellent" and German corvette "Renown," should be furnished with types of the different guns adopted for the armament of our cruisers. The construction and care of machine-guns and service small-arms should be explained in detail to these men, with the use of fuses of the various projectiles and styles of ammunition furnished. The torpedo school close at hand would afford opportunities for exercise in the handling and use of our greatest modern weapon.

One point to observe will be the man's availability for petty office. His merits in that direction should receive every attention and encouragement.

Men, upon their third enlistment, if suitably recommended by their commanding officers, should be sent to the station for instruction as trial petty officers; they will then serve as immediate superiors to the young seamen commencing their second term of service. Upon this body of young men their influence as leaders may be observed and felt.

The term of probation should last at least two months. The work of these petty officers as a class should be devoted to their special branches of proficiency; their transfer to service should be, if qualified, as trial petty officers, borne upon the ship's books as such, irrespective of her numerical complement of petty officers, as is now done with seamen and ordinary seamen apprentices, who qualify while in general service. Trial petty officers should be liable to be disrated by commanding officers for incompetency. A trial petty officer who carries his rate through the cruise, if recommended for further advancement, will be entitled to ship on his fourth enlistment as a petty officer, who can be disrated only by sentence of summary court-martial. We may then expect to possess in the navy coxswains who can handle a boat, quartermasters who speak and understand English, captains of guns who know every detail of their drill and have a clear mode of imparting their knowledge to the lower numbers. We will have captains of tops who have learned all that systematic work can teach them, who are given control of men because they know how to handle them, and withal (for routine work, however perfect, will not produce the essential sailor element) we have every rate approved by officers who sail with these men in actual service afloat. A petty officer of this kind will have to respect himself to earn his place, and he will be sure to command the respect of others.

A fifth enlistment should provide for the best of the leading men advantages which could insure their retention in the service. Their minimum age would then be thirty, assuming that the man had taken every step successfully. If properly recommended and qualified, the best petty officers might be sent forward for their final work at the training-station. Many would find employment there as instructors of

recruits; all should undertake that difficult work for a time, as a test of their qualifications. Their term of work in connection with the station should be fully half a year, and their attainments and usefulness carefully studied. If successful, they should constitute a list of appointed petty officers, to be disrated only by sentence of General Court, and have a pay of sixty dollars a month, increasing with successive enlistments. Our masters-at-arms receive sixty-one dollars and fifty cents; our machinists, when we had that rate, received seventy-five dollars. We expect our appointed petty officers to have more knowledge than our former masters' mates in all matters of drill, to be better qualified and selected for handling men. Over ten years of sea service in regular cruisers should render them good seamen, or they would fail to be recommended. To keep such men, and to encourage others to follow their example, we must, without withdrawing them from the crew and their quarters, offer them a respectable position, every possible privilege, and a pay that will bear some comparison with the amount others can earn ashore on a smaller capital of brains and reliability. The British soldier's argument, that "one cannot expect all the virtues for a shilling a day," means that to get and retain a certain grade of men, we must regard them, like other laborers, as worthy of their hire. Our countrymen of the class we need will not remain in service if their friends and associates ashore earn double their wages for no greater work, with far less personal responsibility and discomfort. We try to supply our warrant-officers' list from among the petty officers of the navy, and should continue to do so. But those positions are so few in number that they cannot induce many men to remain upon the slender chance of securing a warrant. An intermediate grade open to larger numbers is needed and should be supplied. A leaven of three or four appointed officers to every hundred men of the ship's complement would be cheaply secured even if we reduced the number of landsmen allowed to the vessel to make up for the increase of pay. As intelligent leaders of the crew and chiefs of the petty officers, as schoolmasters or yeomen or masters-at-arms, they would at ordinary times fill offices already existing on board ship, thus reducing the actual expense of their creation, and providing better men for these rates. In time of war and consequent expansion of our forces, their skilled services in organizing and controlling the ships' companies would be invaluable. Such connecting-links between the forecastle and quarter-deck could not be secured to us now at any price. Nor should we forget the influence of their example and success upon younger members of the crew, who are given a fair prospect of advancement,—a respectable position open to all who choose to work for it.

But these measures, or any others adopted to retain good men in service, will avail us nothing with our present treatment of the continuous-service certificate and honorable discharge. These documents are

given only to desirable men completing a three years' enlistment. Both papers offer certain advantages of extra pay and other inducements for continued service. If the holders present themselves within given limits of time for re-enlistment, they are credited with three months' extra pay, "*which shall be considered as honorable discharge money, and so paid.*" As matters now stand, seamen who have earned such papers, and who are known to be valuable men, may appear in due season at the rendezvous and yet be unable to ship. The complement of seven thousand five hundred men allowed by law happens to be filled; although there may be hundreds of indifferent men in service, although commanding officers would gladly discharge some worthless case to get the certificate-holder, the latter cannot re-enter the service. Losing his chance of shipping, the man also loses the "honorable discharge money," not wages, to which his compliance with the contract would seem to entitle him. The man may ship a week or a month later, but he loses all his gratuities, extra pay allowance, etc., because the recruiting officer cannot certify that the letter of the law has been observed, re-enlistment not having taken place within ninety days, as required.

Surely provision might be made for a temporary increase over the regular naval complement to admit such continuous-service men; or the man, when he does find a vacancy, should not lose the benefit of his honorable discharge if he can prove that he did his share of the bargain by reporting for duty at the proper time. As it is, we secure rigid adherence to the letter of one law by disregarding the spirit of another. If this is not an act of bad faith, it is certainly very bad policy.

The scope afforded to our training system by adopting some general plan of action will be a great one. The views presented here, or such better ones as may be suggested, will appeal for support to all who appreciate the difficulties under which we labor with our present *personnel* and the danger of leaving our requirements until it is too late to meet them. The more conservative may reflect that in adopting a training system we are merely following where the other great nations have shown us the way. Our harmless enthusiasts who glory in all things foreign, and would have us copy our British cousins in the cut of our clothing and the color of our spars, will find in this matter also something further to imitate. In less than twenty years Old England, through her training-ships, has supplied her magnificent navy with a force of over twenty thousand seamen and petty officers unequaled for their efficiency. France, Germany, and Italy meet similar wants with like measures. Let us also consider this lead as worthy to be followed, and, if we may not achieve so brilliant a success, at least do something to deserve it.

AARON WARD.

THE HISTORY OF THE FLAG.[1]

WITH such a voluminous title we naturally expect a voluminous book, and in this we are not disappointed. The exceeding number of interesting subjects discussed absolutely defies any notice which would occupy a reasonable space. The scope of the work is so great that we despair of being able even to touch upon most of the topics.

Admiral Preble has, however, given us in every page something well worth recalling, if previously known, or else something novel and interesting which it behooves all Americans to be acquainted with. One is, moreover, attracted and favorably impressed by the excellent paper and clear typography, and the promise is borne out when we come to the perusal of the book.

The author, in the preface to the first edition, tells us that he had been twenty years employed in collecting the materials for the work, and during the eight years which have elapsed since that edition was published much new and valuable matter has been added.

In the preface to the second edition (appropriately dated July 4) he points out the interesting fact that, although we are comparatively a new nation, the Stars and Stripes are older than the present flag of Great Britain, established in 1801; than the present flag of Spain, established in 1785; than the French tri-color, decreed in 1794; than the existing flag of Portugal, established in 1830; than the Imperial German flag, established in 1870; than the Italian tri-color, established in 1848; than the Swedish-Norwegian ensign, the recent flags of China and Japan, or the flags of all the South American states.

To these he might have added some others, notably the flags of Mexico and of Belgium.

In addition to various fugitive pieces and magazine articles published at various times upon the origin and history of our flag,—such as the "History of our Flag, by F. L. Sarmiento, Philadelphia, 1864,"

[1] "HISTORY OF THE FLAG OF THE UNITED STATES OF AMERICA, AND OF THE NAVAL AND YACHT CLUB SIGNALS, SEALS, AND ARMS, AND PRINCIPAL NATIONAL SONGS OF THE UNITED STATES, with a Chronicle of the Symbols, Standards, Banners, and Flags of Ancient and Modern Nations. By Geo. Henry Preble, Rear-Admiral U.S.N. Second revised edition. Illustrated with two colored plates, two hundred engravings on wood, and maps and autographics." Pp. 815. Boston: A. Williams & Co., 1880.

Prescott's pamphlet in regard to the first salutes to our flag by foreign nations, and others,—we have the well-known work of Captain Schuyler Hamilton,—now General Hamilton,—published many years ago, and supplemented, in 1877, by an address before the New York Historical Society.

But it has been reserved for Rear-Admiral Preble not only to group all known facts connected with the history of "Old Glory,"—as the soldiers of the late war used to call it,—but also to give much information upon the subject of all flags,—from the Egyptian, Hebrew, Greek, Assyrian, and Persian eras; from the "banner of fine linen," on the ships of Tyre, to the Pacha's horsetails; from the Labarum, the Beauçeant, and the Oriflamme to the battle-flags and guidons of the Rebellion; from the flag of the Sandwich Islands and of New Zealand to—that of Heligoland, we were about to say, but that appears to be one of the local curiosities which the gallant admiral seems to have overlooked.

To enable our readers to see how comprehensive is the plan adopted in this unique work, we may be excused for giving some idea of the table of contents, in addition to which we may mention (what is rare in books of this character) that there are no less than three excellent indices,—a Reference Index, another of Subjects, and a third of Names.

Part First—comprising about one hundred and fifty pages—deals with "The Standards, Flags, Banners, and Symbols of Ancient and Modern Nations." And here we may remark that there are occasionally to be found, scattered through the work, some errors in the orthography of foreign words and of surnames, which will no doubt be corrected in another edition. The part teems with historical references and anecdotes germane to the subject, and is appropriately closed by the caustic verses addressed to our flag by the poet Campbell, which verses have, however, lost their significance since our late war:—

> "United States, your banner wears
> Two emblems,—one of fame;
> Alas! the other that it bears
> Reminds us of your shame.
> Your standard's constellation types
> White freedom by its stars;
> But what's the meaning of your stripes?
> They mean your negro's scars."

A fair and biting retort to this, and as true to-day as it was a quarter of a century ago, was written by the Hon. George Lunt, of Massachusetts, and runs as follows:

> "England! whence came each glowing hue
> That tints your flag of meteor light,—
> The streaming red, the deeper blue,
> Crossed with the moonbeam's pearly white?

"The blood and bruise—the blue and red—
Let *Asia's groaning millions speak;*
The white, it tells of color fled
From starving Erin's pallid cheek!"

In acknowledgment of this pungent reply, Mr. Campbell forwarded a splendid copy of his works, with a complimentary letter, to Mr. Lunt.

The second part of Admiral Preble's work occupies about one hundred pages with the early discoveries of America and the first banners planted on its shores, Colonial and Provincial flags, flags of the pre-Revolutionary and Revolutionary periods preceding the Stars and Stripes, as well as the Grand Union or Continental Flag of the United Colonies. There is also an elaborate account of the Rattlesnake, Pine-Tree, Appeal to God, Beaver, and other ensigns used at that period, as well as an incidental account of the uniform adopted for officers of the Continental army and navy, as well as that worn by the City Troop of Philadelphia, and by Washington's Life-Guard.

Part Third is devoted to the history of the Stars and Stripes from 1795 to 1818, during which period there were fifteen stars and fifteen stripes; and Part Fourth, from the latter date—when thirteen stripes were established, with a star for each State—to 1861. The story of the making of the first flag, by Mrs. Ross, of Philadelphia, and of the flag of 1818, by Mrs. Reid, is well told, and seems to settle definitely these two points, which have been such fruitful themes for newspaper discussion.

Part Fifth is devoted to the flag during the great rebellion, including the Southern flags, and it is, of course, of great interest. The incident upon which Whittier founded his well-known and charming little poem of "Barbara Frietchie" is discussed at full length, and the facts adduced serve to show how difficult it is to obtain thoroughly authentic information, even upon the events of our own time; and we are inclined to agree with the editor of the *Washington Star*, who, at the end of a newspaper discussion, some years ago, says, "There seems to be considerable mystification in the matter."

Part Sixth deals with the Stars and Stripes from the close of the late war to 1880.

The last hundred and twenty pages of the work are devoted to miscellaneous notices—some very elaborate—of the distinguishing flags and signals of the United States navy, from its foundation to the present time; those of the army, and the seals and arms of the United States, with the origin of the motto, "E Pluribus Unum," and the seals of the various departments of the government, American yacht-clubs and signals, and the origin, text, and fac-simile of autograph of various national and patriotic songs. Among these latter, in addition to the "Star-Spangled Banner," "Hail, Columbia!" and others, are given

those two stirring and beautiful poems, Drake's "American Flag," and "The Blue and the Gray," by Francis Miles Finch, with the refrain,—

> "Under the sod and the dew,
> Waiting the judgment day:—
> Under the laurel the Blue;
> Under the willow the Gray."

We were at first inclined to join issue with the author upon the subject of the origin of "God Save the King," to which the words of "America" have been wedded in this country. But after considerable examination of authorities, such as Brewer, Bingley, Dr. Burney, Fébis, Grove, etc., we have come to the conclusion that "God Save the King" was first sung, *in its present state*, at the celebration of the taking of Portobello by Admiral Vernon, in 1740, and *not* on the birthday of George II. The air, as we know it, appears to have been written by Henry Carey, as the author states. But the "Bundes Lied" of Germany, "Grand Dieu sauvez le Roi," a Scotch carol of 1611, and the Danish "Heil dir in Seigercranz," are all as old, or older, and all go to the same air. The words, "God Save the King," are found in Coverdale's Bible, instead of the literal translation, "Let the King live."

Next to the history of the Stars and Stripes, and the collation of the acts of Congress upon the subject, illustrated by anecdote and private letters, perhaps the most interesting part of the work to Americans is the account of the adoption of the Confederate flag, and of the suggestions made when the matter was under consideration. The "Stars and Bars" appear to have been retained solely because that flag had a "union" which could be reversed, as a signal of distress, and therefore desirable for vessels of all kinds, and for fortresses. But the "Stars and Bars" were never favorites in the South, being "a detested parody upon the Stars and Stripes." The Southern Cross upon a white field, the battle-flag, although never actually legalized, came to be the colors under which many of the most bloody and decisive battles of the war were fought.

It was certainly carried by one Confederate man-of-war, the iron-clad "Atlanta," which vessel, however, made but one foray, that into Wassaw Sound, when she was whipped and captured, in a very few minutes, by the monitors "Weehawken" and "Nahant." She hauled down the new colors and was forced to tear out a portion of the white field of the same flag to hoist in token of submission.

Although the great labor of this work has evidently been "a labor of love" with the author, we feel sure that he will reap his reward, not only in seeing his book upon the shelves of all libraries and the tables of all editors, the collections of all military posts, public schools, and Grand Army posts, but in the consciousness that he has stirred within the breasts of young and old, wherever the Star-Spangled Banner floats, a renewed love for the emblem of our sovereignty and prosperity.

THE SIGNAL SERVICE ORGANIZATION.

THE well-considered article in THE UNITED SERVICE for November on "Signal Service Succession," afforded gratifying reading to every friend and well-wisher of that service. Its treatment of the subject in question was so full and complete that it need not be further dwelt or enlarged on. The article set forth plainly and succinctly the efficiency and economy of the present management of the service, the necessity and importance of retaining its military organization, and pointed out clearly that its duties and services are a benefit rather than an injury to the army. The great and growing value of the service, its rapid development, its practical aid to navigation and commerce, its vast importance in relation to the varied industrial interests of the country, were duly alluded to and acknowledged. As was suggested by that writer, it is not probable at this late day, despite the petition lately presented the President by a committee purporting to represent the views of the purely scientific men of the country, that any change disassociating it from the army is practicable. Recent events have shown that the people do not desire change for the sake of change. The question of succession will probably be settled before this article is in print. It is to be believed and hoped that the President in making this selection will appoint to the position a pre-eminently fit man who will do honor to the office. The object of this article is not to discuss the subject of such selection, but to tender some suggestions as to a proper organization for the service. An incidental object of the paper referred to was to advance arguments favoring the present organization of the corps, except that ten of its officers should be permanent. No such arguments were adduced, nor was the subject of organization touched on. From this statement that "the signal service should remain as now organized because it has proved successful in a pre-eminent degree," it is to be inferred by the reader that such success has been the result of its organization. Such is not the case. The service has succeeded solely through the superiority of its *personnel*, and despite the disadvantages and drawbacks resulting from its unorganized condition and the too frequent change of officers. From 1868 until the present time no less than *fifty-six* officers have been detailed for signal duty; of this number but nineteen, or one-third, now remain on such duty,

and of these nineteen but nine have served over five years. Over thirty of the entire number served less than two years with the corps. Of these civilian assistants but one remains. As it is generally admitted by those familiar with the subject that at least one year's study and experience is necessary to render an officer thoroughly familiar with his duties and of value to the service, it can readily be imagined how little the corps has profited by the labors of officers who have served such short details. This system has been, indeed, rotation in office. Can one imagine the chief of engineers, the chief of ordnance, the surgeon-general, or, indeed, the head of any corps or bureau wherein special training and education are considered essential qualities, expressing his belief that a similar organization would conserve the highest interests of his department, ensure the best quality of work, or best establish the reputation of the bureau? A casual reference to Congressional documents on the reorganization of the army shows clearly the opinions of the most thoughtful and experienced officers on this subject. But the remarkable feature of this organization is the fact that its entire management, the elaboration of all its details, the performance of all its scientific work, and the perfecting of the methods used therein, have devolved upon officers and civilian assistants who have no status in connection with, nor recognized claim upon, this service. Were this fact not known otherwise, it would appear from a careful examination of the annual reports. To state it plainly, the signal corps has appropriated to itself for years the labors of these men, and has, as yet, given in return neither rank, acknowledged standing, nor even, adequate personal credit. The efficiency of the present *personnel* is shown by the unchanged status of the service since General Myer's death. However, the conditions of the service during this year have but slightly differed from those of preceding years when its chief, absent for months consecutively, either in Europe or this country, left the management and charge of the entire work to his subordinates. How those duties this year, as before, have been performed the general public can best answer. The weather forecasts are as widely read and found as frequently correct; the cautionary signals mark with the same exactness the approach and passage of storms; the coast-stations continue to give us daily notice of the passing vessels, or, with speedy tidings of marine disasters, summon prompt aid for the shipwrecked mariners; the river reports still give sure guarantees or tender reliable warnings, serviceable, as always, to shippers and merchants; the daily weather reports are posted with equal regularity in the great commercial centres of the country, and by their acknowledged accuracy continue with unvarying uniformity to affect the ruling prices of the great staples of the country. And why should it not be so? These duties rest with the same officers as in the past,—officers who do not belong to the signal corps. And of what does the signal corps legally consist? It is difficult to say.

Section 22, Act of Congress, approved July 28, 1866, reads: "There shall be one chief signal officer . . . the Secretary of War shall have power to detail six officers, and not to exceed one hundred non-commissioned officers and privates from the battalion of engineers, for the performance of signal duty, but no officer or enlisted man shall be so detailed until he shall have been examined and approved by a military board to be convened by the Secretary of War." For some unknown reason no such detail was ever made. In 1868 a number of line-officers, selected on the recommendation of department commanders, were ordered to report in Washington for signal duty. These officers were required not only to pursue a prescribed course of study and practice, but also to pass a rigid and satisfactory examination as to their duties, before they were announced competent as acting signal officers. Fifty picked enlisted men were also selected from the general service complement at Governor's Island. This quasi organization continued for years simply by the inherent authority of the Secretary of War. The joint resolution of Congress, dated February 9, 1870, imposed upon this service certain meteorological work, which speedily dwarfed and overshadowed its original duties, and soon claimed its undivided efforts and attention. The Secretary of War then authorized enlistments for this work, with conditions at first, which, being soon after withdrawn, relegated the enlisted force to the status of general service men. The service remained in this unsettled condition until 1874, when its status was illy and unsatisfactorily defined by Congress. The act of June 18, 1874, making appropriations for the army, reads: "Nothing in this act shall be construed to diminish the signal service, which shall be maintained as now organized under the authority of the Secretary of War." In 1876 the act of July 26 provided that "The signal service . . . shall hereafter be maintained as *now organized*, and as provided by law with a force of enlisted men not exceeding four hundred." As no organization had ever been made by color of law, it was difficult to decide what this act really meant. By a strange inconsistency the chief of the service opined that it gave a status and standing to the enlisted men, but none to the officers. In consequence the corps then consisted of a colonel and four hundred enlisted men of grades not defined. No law changing or fixing the number of officers has since been enacted. Yet at the time of this writing, apart from the enlisted force, the signal corps is held to consist of four second lieutenants, in addition to the brigadier-general who is soon to be appointed. On June 25, 1878, an act of Congress fixed the *enlisted force*. The act reads: "And the enlisted force of the signal corps shall consist of one hundred and fifty sergeants, thirty corporals, and two hundred and seventy privates, who shall receive the pay of engineer soldiers of similar grades; and two sergeants may in each year be appointed to be second lieutenants." In connection with the last clause of this act it should be borne in mind that, annually, a

deserving sergeant of this organization had been recommended for appointment as second lieutenant. Three such appointments were made by the President; but in the last case, owing to the political disability of the sergeant, Congress was called upon to pass an enabling act. The case was thoroughly discussed and the bill finally became a law. The understood object of the last clause of the act quoted was to guarantee to two deserving sergeants annually a similar reward. As the act failed to specify any particular arm of the service in which these appointments should be made, the chief signal officer was of the opinion that it authorized a yearly addition, unlimited in time, of two second lieutenants to his corps. The first action taken under this law was as remarkable as the decision. An employee of the service enlisted one day as a private and promoted to be sergeant, was appointed the next day a second lieutenant, and was further decided, by virtue of nomination alone, to be senior to an appointment of even date bestowed upon a sergeant who had served for years.

As the case now stands, without an intervening act of Congress the signal corps in 1885 will consist of a brigadier-general and sixteen second lieutenants, all of the latter grade being recruited from the enlisted men of the corps. Far be it from the writer of this article to here cast any reflection upon the standing, intelligence, or ability of the enlisted men in that service. Carefully recruited after a rigid mental and physical examination, those mentally unable to rapidly and intelligently master the course prescribed remain as second-class privates, while the service is soon rid by discharge of those morally deficient. It is eminently just and proper that these sergeants should be appointed to commissions in the line, whence they could return to the signal service, as is elsewhere suggested. It is more than possible that the new chief signal officer will be unfamiliar with the details of his position. Upon him the officers and assistants of the service can have no direct claim. It will, however, be for him to make and entirely shape the future of that corps. Shall it be composed of officers selected in this manner? The filling of the ordnance and medical departments by promotion of the hospital stewards and ordnance sergeants of the army would be cases closely and strictly analogous to this. It is not to be believed that a second chief will pursue this course. A corps of signal officers must necessarily be authorized by the same act that limits or prohibits similar promotions of sergeants in the future. The enlisted force of the corps under the act of 1880, which made its chief a brigadier-general, was fixed at five hundred men. An increase of fifty men will probably be necessary in the near future. The present force, then, more than equals a regiment of infantry, to the command of which three field-, two staff-, and thirty company-officers are allotted. The engineer battalion of two hundred men has eighteen officers. It is thought that the present duties of the signal service could be properly

and efficiently performed by twenty-one officers, comprising one brigadier-general, one lieutenant-colonel, three majors, eight captains, and eight first lieutenants. With the promotion of the present incumbents the grade of second lieutenant should be abolished. The number of field-officers suggested is very limited, considering the character and importance of the duties which devolve on the officers of the service. The station-officer has sole control and command of nearly three hundred men, and incidentally and partially of a hundred more. This would, under ordinary circumstances, be considered to-day a colonel's command; but, scattered as these enlisted men are, at isolated stations over the entire country, the proper care and supervision of them demands more work and attention than falls to the lot of any regimental commander in our army. The property-officer of the service disburses half a million dollars for the corps, and a quarter of a million of the funds pertaining to other branches of the service. He is responsible for instruments and property scattered over the whole area of North America, the aggregate value of which amounts to millions. The telegraph department, too, demands a field-officer, for in that division the management, maintenance, and care of over six thousand miles of telegraph alone would tax his energies. In addition, the money-papers of the division superintendents, involving nearly one hundred thousand dollars a year, demand strict and careful supervision. This would leave but one field-officer to assume charge and control of the department of military signaling. This apportionment leaves no place in the grades of field-officers to those assistants who perform what may be considered the most important duty in the office; that is, the forecasting or predicting of the weather, the collating and editing of the current office publications. Preferably, the number of field-officers should be eight, certainly not less than four, as shown above.

Simple justice demands that *at least one-half* the original appointments be made from duly qualified acting signal officers who have served at least four years as such. The ordnance and medical departments offer model systems for filling future vacancies. No one should be appointed who does not pass a rigid and searching examination on a wide range of subjects to be determined by the chief signal officer. All such appointments should be made from second lieutenants of the line who *have served two years with troops.* Such a course would ensure to the signal corps in future the same excellent material that this system has secured to the ordnance department in later years. This article may fittingly close with an extract from an annual report of the service: "Justice would seem to require that a service which has existed,—and with admitted good results to the United States,—for now thirteen years as a temporary service, and on which officers have served continuously through details of ten years' duration in peace and in war, living and dying in this service alone, should be held to have established a claim to permanency."

JUSTITIA.

A YOUNG HERO.

It was my happiness, during the late war of the Rebellion, to be thrown into intimate association with one of those younger officers of the navy whose brilliant career and eminent success reflected the greatest honor upon our naval service and won great distinction for himself.

The interests of the service to-day require that the recollections of the gallant deeds and of the noble characters of those who formed a part of it in the past should not be permitted to fade away, but the memory of their merits, their deeds, their noble traits, should be perpetuated for the instruction, the admiration, and the emulation of those who have succeeded them; that all may learn to point with pride to the worthy records of those who have brought honor upon the service, and that the base spirit of selfishness, which is fast creeping into it (with a tendency to hide from sight all that is noble and good in individual records), may be crushed out by frank homage paid to true merit.

A sketch of the naval career of Lieutenant Roswell H. Lamson will form a fitting supplement to that of his friend, William B. Cushing, which appeared in a recent number of The United Service, since these two gallant young officers often fought side by side, and, without a shadow of jealousy, were continually vying with each other to see which would win the greatest success in action; and each, with a generosity always found allied with true courage, ever had words of praise for the gallantry of the other.

Roswell H. Lamson entered the Naval Academy in September, 1858, and graduated second in his class, which was led by the brave Preston, who fell at his side whilst nobly leading in the assault of the naval brigade on Fort Fisher, on the 15th of January, 1865, where Lamson himself was severely wounded.

He was of studious habit, devoted to his profession, and most faithful in the discharge of his every duty. His associations and experience prior to entering the academy having been among those much older than himself, and amidst scenes that called upon him, boy though he was, to perform the duties of a man, well prepared him for the stirring scenes that met him at the threshold of his career.

At the age of fourteen he had crossed the Plains with his father to Oregon, and that exciting border-life trained him early to habits of

observation and gifted him with prudence, whilst the association with those brave men, the pioneers of civilization in the great Northwest, gained him manliness and self-reliance, which qualities were strengthened at the academy by the zeal with which, as a student, he prepared himself for his professional career.

I first met him when attached to the staff of Rear-Admiral Lee, commanding the North Atlantic Blockading Squadron, Lieutenant Lamson being then the flag-lieutenant; and our duties bringing us into intimate association, he soon became endeared to me for his many noble qualities of mind and heart.

I found him to be of the highest moral character, strictly temperate, highly honorable, and of perfect integrity. Accurate and thorough in the performance of every duty, possessing great vigor of mind and energy, he had won the entire confidence of his superiors; his amiability and frank *bonhomie*, his courtliness and many accomplishments, had gained him the affection of his messmates, and his resolute daring, his fearlessness and courage, manifested in numerous actions, secured to him the devotion of those who served under him.

It was most gratifying to me to witness the trust reposed in him by the admiral, to observe the weight given to his opinions by those so much older than himself, who seemed to appreciate his sterling good sense, his sound judgment, and his bold courage.

The records of the Navy Department for those years of the war bear frequent testimony to the efficiency of his services as an officer and the credit his conduct reflected on the navy.

His friend, Cushing, only surpassed him in the result of that daring endeavor which, in the destruction of the rebel ram "Albemarle," made secure the Federal control in the sounds of North Carolina.

One gallant enterprise, in which the names of Cushing and Lamson were in a measure united, although the greater glory from it was won by the latter, will, I am sure, prove interesting to the reader and instructive, I think, in showing to the junior officers of the service that all the opportunities for distinction and honor are not monopolized by their seniors, but that energy, activity, valor, and ability will always find occasions to force recognition; and it will teach that unselfishness, devotion to duty, and hearty co-operation with each other will ever insure the best interests of the service and will nurture an *esprit de corps*, which now seems about to be run into the forecastle as a thing not to be cultivated by an officer; for we have seen lately, and with regret, that there are those in the service who *think* that their honor is not tarnished by their unworthy efforts to detract from and belittle the brilliant records of their brother-officers.

In the month of April, 1863, the Confederate forces south of the James River seemed to awaken to unwonted activity. A large force,

under the command of Major-General French, had nearly surrounded Suffolk, Virginia, and were advancing their left flank upon the Nansemond River, with a view to crossing that stream, taking our army in the rear, and, after capturing Suffolk, driving General Peck back upon Norfolk, which would be thus seriously threatened.

Our admiral was called upon for aid, with the request that he would check the enemy's advance on the line of the Nansemond.

Lieutenants Cushing and Lamson were called into the presence of the admiral, who explained to the young men the gravity of the situation and told them he looked to them to fitly represent the navy.

A few tugs and ferry-boats of light draft, lightly sheathed in boiler-iron, a protection only against leaden bullets, were ordered to the front, being the only craft that could be used in the shallow waters of the stream.

To Lamson was assigned the protection of the Upper Nansemond, and to Cushing that portion of the stream below the Western Branch.

Taking a detail of men from the flag-ship to work his howitzers on the "Mount Washington," Lamson steamed off, followed by a couple of the tugs, and headed for his station, soon followed by the gallant Cushing in the "Commodore Barney," with tugs to assist in patrolling the stream.

I will not tell of the activity shown by Cushing on his station, of his dashing reconnoissances, even into the enemy's lines, nor of his skill, for my sketch would be too greatly lengthened.

For several days after reaching their stations they were annoyed only by occasional shots from sharpshooters on picket; but on the 14th of April, whilst steaming down, convoying a small army-transport, the "Mount Washington" suddenly met a sharp fire from the enemy's concealed battery, penetrating her boiler and entirely disabling her.

The "Stepping-Stones" was ordered up to take her in tow, and when just above the obstructions at the bar, near Western Branch, a terrific fire was opened on her from ten guns, six in an earthwork thrown up on the point commanding the channel, and four concealed in the adjacent woods.

The hawser was cut and the "Mount Washington" drifted ashore in front of the battery and lay at the mercy of the enemy. Then shone forth the hero in her young commander. The "Stepping-Stones" was ordered alongside, and the engineers, firemen, and all except the detachment from the "Minnesota," were sent off and ordered down stream out of range, whilst Lamson remained, with his handful of men, to save his vessel if he could. The enemy kept up an incessant hail of shot upon the frail vessel from their batteries, and their riflemen riddled her from stem to stern.

Was Lamson idle? Not he. His purpose was to save his ship.

He ordered his men to take his boat and run out a line from the bow to a pile in the stream, that he might haul the vessel into the channel.

The open deck was swept by bullets, and the men shrank back at first from the danger, when the brave Lamson, knowing the force of example, sprang forward, and facing them, said, "Obey my orders and *come*, or I fire!" and in an instant his men were around him; the boat was manned and the line run out. The battery kept up its fire on the boat, strangely missing it, but a shot carried off the head of the pile as the line was being thrown over it, and the boat was forced to retire.

Lamson had one of his howitzers hoisted to the hurricane-deck of the old steamer, and taking his master's mate, Birtwistle, and two seamen with him, he sent the rest of the men below into safety, and, mounting the deck from between the paddle-boxes, fought the enemy with shell and shrapnel under a terrific fire.

Finally his flagstaff was shot away, when these brave fellows rushed aft, hauled up the staff by the halliards, and, running the flag to the truck, expended the halliards in lashing the staff to the stump.

Never will a greater tribute to valor and daring be given than that young hero then received. No sooner had the stars and stripes filled out again to the breeze than the rebel firing ceased, and their whole force, leaping to their earthworks, gave him three rousing cheers, in which the Union forces on our side of the stream, who were witnesses of the heroic act, joined with enthusiasm. The "Stepping-Stones" was permitted to tow off the disabled steamer, which was so riddled in hull and machinery as to preclude a statement of the amount of damage done to her.

But Cushing and Lamson had been sent there to protect the army's flank, and they allowed themselves no respite from their arduous task. Cushing had gallantly fought the battery which had so roughly handled his friend, and when the two came together they at once matured plans for their future operations, and on the turning of the tide, Lamson, taking command of the "Stepping-Stones," ran the fire of the battery again and reached his station without taking time then to report the action he had been in. Cushing, however, in his dispatch to the admiral, sent down with the disabled steamer, paid fitting tribute to his friend, saying, "*It is only necessary to look at the 'Mount Washington' to see with what desperate gallantry Lieutenant Lamson fought his vessel.*"

Lamson did not long rest quiet or content himself with simply patrolling his beat. A longing grew up within him to give the enemy a Roland for his Oliver. He *wanted* that battery which had pounded him so heavily. And soon we find him begging the loan of a few companies of soldiers from General Getty, who was filled with admiration for his gallantry and skill, and willingly recognized the soundness of his judgment.

Hiding the open decks of his ferry-boat, the "Stepping-Stones," by

means of hammock-cloths hanging from the awning-ropes, Lamson for two or three days kept steaming up and down the river, as if watching for a chance to round the point and run the battery, but would always retire on reaching a certain point.

The rebels were evidently watching for him, and desiring to repeat the dose they had given him before had trained all their guns on one point in the channel close to the battery, where they felt sure a concentrated fire would riddle and sink the vessel.

Having repeated his manœuvres often enough, Lamson took on board detachments from the Eighty-Ninth New York and Eighth Connecticut Volunteers, and on the 20th of April, in the afternoon, slowly steamed down stream. His men were all ready and well instructed as to his plans. The rebel gunners could be seen, lock-string in hand, ready to greet him, should he pass the fatal line, when, putting his helm a-starboard, Lamson ran his steamer's nose into the mud just above the battery, the hammocks were triced up, gang-planks run out, and with a cheer the soldiers charged ashore and took a ravine leading to the rear of the battery. Lamson at the same time ran ashore his battery of howitzers, and rushed them to the hill overlooking the enemy's works. Surprised, the rebels only had time to wheel one or two guns and fire into the advancing column, when the howitzers pouring into them an answering volley of grape and canister, they threw up their hands and surrendered.

Before nightfall one hundred and sixty-two prisoners and five guns, with all their ammunition, were safely within our lines, and the news of the victory had been dispatched to the admiral.

In three communications to the admiral, now on the files of the department, did General Getty pay glowing tribute to the gallantry, daring, and ability of this young lieutenant, and to his admiration for his skill, energy, and success in this action, which effectually checked the advance of the enemy in that direction.

The admiral crowned his repeated words of praise by a request to the Secretary to permit Lieutenant Lamson to retain the sword he had so gallantly won from the commanding officer of the enemy.

Such is a brief sketch of the naval career of my friend, Roswell H. Lamson. On many other occasions was he distinguished for gallantry, and he was always glad to share his laurels with others who would strive for them. A truly brave man himself, he never envied the gallantry shown by others, whose success was to him simply an incentive to greater energy and to a becoming emulation of their deeds.

He was universally loved and admired by his brother-officers, and was well worthy of the congratulations of the Secretary of the Navy, who wrote words to him that all young officers should strive to merit for themselves, and which will form a fitting close to my sketch; they were as follows:

"NAVY DEPARTMENT, May 4, 1863.

"SIR,—Your recent important and meritorious services on the Upper Nansemond deserve the special commendation of the department. The ability displayed in the discharge of the important and responsible duties which devolved on the naval force during the late demonstration of the enemy, reflected great credit upon yourself and the officers and men under your command. Their zeal and courage in the hazardous position in which they were placed have not failed to receive the approbation of both the naval and military authorities. General Getty, with whom you were co-operating, has expressed his obligations to you and your command for gallantry and energy displayed, especially in the capture of a rebel battery on the Nansemond, and for valuable assistance rendered to him during his operations in repelling the enemy; and your immediate commanding officer, Acting Rear-Admiral Lee, has reported, in terms of admiration, your discretion and valor.

"The department congratulates you on your success, and is proud to see in the younger members of the corps such evidences of energy and gallantry, and execution and ability, scarcely surpassed by those of more age and experience.

"Very respectfully, etc.,

"GIDEON WELLES,

"Secretary of the Navy.

"LIEUTENANT R. H. LAMSON,

"United States Navy."

F. P. B. SANDS.

EDITORIAL NOTES.

When Dulcigno shall have been surrendered, which, despite the hitherto success of Turkish tergiversation, seems at last imminent, the powers will have to face the question of the Greek frontier. However gladly they would, if they could, escape this necessity, circumstances beyond their control will force them to deal with it, either by supervising a peaceful cession of the territory allotted to Greece by the Supplemental Berlin Conference, or by armed intervention in behalf of Greece when she shall attempt, as she assuredly will, to wrest from Turkey the territory she demands. Greece has now, and for a considerable time has had, under arms a force of some forty thousand men, which is rapidly being augmented, and which is a serious drain upon her not overstocked treasury. She cannot afford to keep this force much longer in its present state of idleness, nor will she disband it until her claim to the territory in question is definitely allowed and made good. If the powers do not with becoming promptitude address themselves to the task of seeing her righted, she will doubtless, at an early day, take the initiative and precipitate a conflict which will compel them to intervene in her behalf. Unaided, Greece could accomplish nothing against the Turks, but she has a perfect right to count on effectual assistance from the powers in case she comes to blows with the Moslem, and it is her reliance on that support that will nerve her arm to strike for the enlarged area which has been assigned her. This phase of the Eastern question will prove a much more interesting one than has that which will disappear with the accomplished cession of Dulcigno. Greece is most likely to become a factor of prime importance in the final settlement of the Eastern question, and may with good show of reason be regarded as heir presumptive to the Ottoman capital. What the Berlin treaty gives her is but a small part of what formerly belonged to her, and her re-possession of it will, it is to be hoped, prove the beginning of her coming to her own.

It has been determined to continue the military occupation of Candahar, at least until spring. The reasons assigned for this determination are, want of confidence in the loyalty of Wali Shere Ali and the still inse-

cure position of the new Ameer. To these reasons there should probably be added the hesitation of the government to definitely adopt the policy of entire evacuation. The retention of Candahar involves the risk to the British of becoming involved in another Afghan campaign as costly and fruitless as has been the one recently terminated. English correspondents represent that rumors are current in Candahar of Persian and Turcoman assistance to Ayoob Khan in getting ready for another campaign, his chief want at present being money. The Mollahs are hard at work exciting the population, and denouncing downheartedness and want of confidence. Ayoob is looked upon as a popular hero, and his defeat by General Roberts is regarded as the veriest trifle compared with the glory of his great victory over General Burrows.

UNDER the inspiration of a Congressional appropriation, and the prospect of further liberality from the same source, active steps are being taken looking toward a suitable celebration of the centennial anniversary of the surrender of Lord Cornwallis at Yorktown, Va., which occurs October 19, 1881. In this country the impression has generally prevailed, and our children have been taught by pen and pencil, that the haughty British commander yielded his sword to General George Washington upon that memorable occasion; but in France a different version obtains, and the brush of an artist has furnished a historical painting, which has hung in the gallery at Versailles, representing the Count Rochambeau, our valued friend and ally, in the foreground, receiving the aforesaid emblem of military authority sheathed in defeat, while the Father of his Country stands modestly and approvingly in the background. To intensify the situation, and prevent any possibility of misapprehension, Washington is pictured as surrounded by his faithful servants of the African race. In this way is another cherished belief assailed. However, this is not to deter proper recognition of the centennial day, and already a joint committee of Congress has visited the ground to select a site for the proposed monument, already appropriated for, and take other action bearing upon the matter. It is said that the French government will be invited to send a fleet, a regiment, and a battery to participate in the exercises, and that each of the thirteen original colonies will be represented by military bodies and their present governors. Yorktown, where all this is to occur, is a hamlet on York River, about ten miles from its mouth, which would ordinarily be overtaxed to accommodate fifty strangers suddenly landed in its midst. The assembled multitudes will have to dwell in tents.

THE Chief of Ordnance, in his annual report, strongly advocates the passage of the bill reported by the House committee on the militia

during the last session of Congress, which, it will be remembered, proposed to substitute for the present compulsory militia system, which is practically a dead letter, a volunteer militia, limited in number in time of peace; to encourage the formation of volunteer organizations, equalizing their numbers as between the States; and to abolish the present system of a permanent appropriation to provide arms and equipments, leaving it discretionary with Congress to regulate the annual appropriations for that purpose. He closes his remarks on the subject as follows:

"For many years, in my annual reports and in other ways, I have urged upon Congress the wants of the whole body of the militia, and the necessity for legislation thereon. The permanent appropriation of $200,000, ample, no doubt, in 1808 for a population of eight millions, has proved entirely inadequate for a population of nearly fifty millions, and a country washed by two oceans, with over three thousand miles between their shores. The laws on our statute-books for organizing the militia are obsolete in part, and in part inoperative. They were probably found all-sufficient for the militia in the early portions of our history, with a small population, the country sparsely settled, and no grand centres of busy, bustling, thriving people; but in our present condition, with an immense territory bordered by powerful neighbors, with immense wealth and the greatest prosperity, with a present and a future the envy and admiration of the nations, these laws are insufficient. They should be replaced by others that will more surely and practically carry out the views of the framers of the Constitution, and satisfy the present wants and future demands of our people.

"The bill under consideration may not be complete in its provisions nor perfect in its details, nor sufficiently comprehensive in its scope, but it fixes our *active* volunteer militia within practicable limits, makes it an intelligent living force that can be utilized and controlled, and brings the protection of a legalized armed body of our citizens within easy reach of every portion of the country.

"I have therefore the honor to recommend this subject to your favorable consideration, in the hope that the provisions of the bill will receive your approval, and that Congress will, at its next session, pass the bill, and make liberal appropriations to supply all the wants of the *active* militia."

As an original proposition, few things could have seemed to promise less hopefully than the establishment, on a self-sustaining basis, of a periodical devoted to military and naval literature in this country, where, neither in bulk nor in public favor do the army and navy constitute the important element which they do in Europe. With two ably conducted weekly journals to represent the services, it is not won-

derful that at first sight many well-wishers of such an enterprise should have been skeptical of its success. That the projectors of THE UNITED SERVICE thought differently is evidence not of greater prescience on their part so much as of a closer study of the field they proposed to occupy. The failure of previous attempts in the same direction only taught that prior to the war of the Rebellion the services had not been sufficiently developed to give such an enterprise adequate support; and that during the actual progress of a great war, though the services might swell enormously in bulk, they were too full of action to give room to literature. But when the war was over, and the services had settled down to what might be regarded as permanent establishments, somewhat enlarged from their *ante-bellum* dimensions, and instinct with the new life and vigor which the war had produced, the situation became materially different from any that had ever before existed in this country. To-day, the simple fact is that in no country in the world does there exist so widespread an interest in things military as in our own, and nowhere else is there to be found a richer mine of material for a literature appropriate to the services than right here at home. We may be behind other nations in actual development of the means of war, but we yield to none in the mental activity with which we apply ourselves to the evolution of military ideas. We possess, moreover, a stock of experience full of the romance, the poetry, the comedy, and the tragedy of real and recent war. A distinctively military literature we are bound to have, and THE UNITED SERVICE bases itself on this postulate, and purposes to do what it can to promote and foster the development of such a literature. With its co-workers in the same field it has, and hopes ever to have, the most cordial relations. There is no antagonism between them and it. Natural lines of demarkation sufficiently limit the appropriate provinces of its weekly contemporaries and itself. THE UNITED SERVICE has come to stay, and it closes the second year of its existence sufficiently encouraged by its past experience to hail the future as a friend.

SERVICE LITERATURE.

THE first edition of "The War-Ships and Navies of the World," by Chief Engineer J. W. King, which was published September 1, has already been so nearly exhausted that the second edition has been prepared, and will be issued December 1. It will contain additional matter relating to new types of ships laid down this year, and will be better illustrated than the first edition.

MESSRS. SAMPSON, LOW & Co. announce their intention to publish a work which should be regarded as a memorial of the principal actors in the South African campaign of 1879. It will be a handsomely-bound quarto volume, and will contain a large number of cabinet portraits of the officers in the British army and navy who perished in the war. The same house have published a work entitled, "The Naval Brigade in South Africa," by Fleet-Surgeon Norbury, C.B.R.N.

MESSRS. J. B. LIPPINCOTT & Co. have just issued a little book entitled, "Kate Comerford; or, Sketches of Garrison Life," by Teresa A. Thornet. It presents a picture of army life in Texas in pre-rebellion days, very slightly idealized, if at all, bright and pure in tone, and pleasing in style. We commend it without reserve to readers both in the service and out of it.

MESSRS. A. WILLIAMS & Co., of Boston, have just issued "The Three Years' Service of the Thirty-Third Massachusetts Infantry Regiment, 1862–1865." It is a book of 299 pages, written by Adin B. Underwood, A.M., formerly colonel of the regiment, and gives an interesting account of the various campaigns and battles in which the Thirty-Third participated.

AMONG the articles in THE UNITED SERVICE for January, 1881, will be "A Historical Sketch of West Point," by Major-General J. M. Schofield, U.S.A.; "Compulsory Retirement" (third paper), by General Upton, U.S.A.; "A Medal of Honor for Officers," by Lieutenant T. B. M. Mason, U.S.N.; "The Resolute," by Commodore Wells, U.S.N.; "The Artillery of Germany," by Major J. P. Sanger, U.S.A.; "Two Battle Pictures," by Medical Director Shippen, U.S.N., etc.

WE are very glad to learn that Mr. T. H. S. Hamersley's "Army Register of the United States for One Hundred Years" is meeting with great success, and that the first edition of one thousand copies has been all sold.

AN English friend of THE UNITED SERVICE, under date of November 1, writes us as follows: "Military men are on the tiptoe of expectation for the appearance of the new shilling magazine, the *Army and Navy*. Is the idea of a shilling service magazine purely original? There was a shilling *Naval and Military Magazine* some years ago, and this very week I came across a copy of the *British Army and Navy Review*, a monthly publication at one shilling, beautifully illustrated, issued by Bentley, of Burlington Street. As the number I saw was XXIV., it carried on for two years, but expired in 1866."

THE publishers of THE UNITED SERVICE have recently issued the following circular letter referring to their "Naval Encyclopædia:"

"The manuscript of the 'Naval Encyclopædia' is now substantially complete, and electrotype plates of all but the concluding letters of the alphabet are in the hands of the printer, who is running the book through the press as rapidly as possible. The volume will be ready for issue to subscribers at an early date. We give herewith two specimen pages, which will show the style of type, size of page, and convey a general idea of the plan of the work. The paper will be of the best quality, and the binding in sheep, library style. We append hereto a partial list of the special articles, with the names of the writers. These articles vary in length according to the importance of the subjects.

"The following summary of contents of the book will give an idea of its character and value:

"I. A complete Dictionary of Nautical Terms and Phrases.

"II. Biographical Notices of Distinguished Naval Officers of our own and foreign services.

"III. Special Articles, including in their scope the entire range of Modern Naval Science, prepared expressly for this work by officers and others of recognized ability in their respective fields of discussion, and comprehending the freshest and most authentic information attainable respecting the several subjects treated.

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"This work has been prepared at a very large cost of time and labor, and represents a pecuniary expense of not less than $10,000, making it probably the most costly work ever prepared for the naval profession in this country.

"Of its value to the service and nautical men generally there can be no manner of doubt. The publishers look confidently for a generous response to this, their final circular, from the officers of the service whom the book is primarily intended to benefit. Subscriptions will be filled in the order in which they are received, payment to be made on receipt of the book in good condition. Price, in sheep, $10.00."

G. B. Lake Board Exam
Inquirer 11

THE

UNITED SERVICE

A MONTHLY REVIEW OF

MILITARY AND NAVAL AFFAIRS.

VOL. III.—DECEMBER, 1880.—NO. 6.

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"THANK GOD FOR COMPOUND OXYGEN!"—This is the grateful utterance of a wife of a clergyman, whose husband has been restored to comparative good health and a life of usefulness. Her letter, dated New City, Rockland Co., N. Y., June 14, 1880, thus states the condition of her husband when he began the Oxygen Treatment:

"Rev. A. J. Conklin, Pastor New City and Centennial churches, Newark Conference, has been nearly cured of chronic catarrh and ozena of ten or twelve years' standing, after trying scores of remedies and many physicians with no permanent benefit. *Was run down with overwork; voice injured, memory impaired; eyes very badly impaired, so that he could scarcely follow up general reading, much less study; throat affected, and the whole system in a bad state.* He would have had to stop preaching had he not found help, and was equally unfit for manual labor or business."

And now as to his condition after using Compound Oxygen:

"I asked my husband this morning," writes Mrs. Conklin, "what I should say in reporting progress to you for him. 'Oh,' he says, '*tell them I am well. Never felt better in my life!*' This, on the minister's 'Blue Monday,' *after preaching three times on a very hot day, administering the sacrament and baptismal service, and walking three miles afterwards!* And now he is at work in his garden. *Thank God for Compound Oxygen!*"

Referring to the benefit she had herself received from our treatment, Mrs. Conklin says:

"With the exception of my head I feel nearly well—feel vitalized, in fact. Spinal irritation, kidney derangement, prolapsus, and general debility have all disappeared; except that I have days of great languor still, but not so often nor so great as before. Our names are at your service. Mr. Conklin is well known in Brooklyn, where he preached five years, and in Rockland, Orange, and Westchester Counties, New York State."

"VICTORY!"—A letter from a gentleman in Iowa comes to us with the above heading. In the latter part of April he ordered a Home Treatment for his wife.

"She was," he said, "very weak, lungs sore,—lately spitting blood again; greatest trouble, *pain in back just below shoulder-blade, on account of which she cannot walk much.*"

After six weeks' use of the Treatment, he writes of the result, under the caption of "Victory."

"——, Iowa, June 15, 1880.

"DRS. STARKEY & PALEN. Dear Sirs,—I am happy to tell you that the Treatment you sent me for my wife *has succeeded beyond expectations. I am surprized at finding her so much improved in health.* When she began using the Oxygen she could not sit up more than four hours at a time. Could not walk a quarter of a mile. She improved from the first inhalation, and now, having used the Treatment for six weeks, she does considerable work around the house, and can walk two miles and not be tired! Raises no more bloody matter. No cough. Sleeps and eats well. Bowels regular; and generally on the road to good health. I will write again soon. Have received the paper you sent me, and will always be glad to hear of your good work. All that I can say is, 'Thank God, and Drs. Starkey & Palen.'

"Yours truly, J. L. D——."

"P. S.—Pain in the back and the shoulder forgotten entirely. I asked her one day, '*How is that pain in your back?*' 'Goodness! that's so,' she said; '*I had forgotten all about it!*'"

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AN OPEN LETTER TO THE OFFICERS OF THE NAVY.

THE

Penn Mutual Life Insurance Co.,

921 CHESTNUT STREET.

PHILADELPHIA, June 22, 1878.

DEAR SIR:

We will on application send circulars relating to, and a pamphlet giving the rates for insuring in, The Penn Mutual Life Insurance Co., of Philadelphia, and desire to present to you its merits as a thoroughly reliable Company, and one to which you may safely confide, should you wish by this means to afford protection to your family against the risk of early death. The PENN was established in the year 1847 upon a purely mutual basis; and after having paid to the families of its members in death losses, dividends, etc., nearly Eight and One-half Millions of Dollars, has accumulated a fund of over Six Million Dollars for the future full protection of its insured. It is carefully and prudently managed, and is steadily increasing its assets, as well as the number of its policy holders. Among the latter are quite a number of the officers of the Navy, to whom the Company can refer. The rates named in the table are those charged the first year,—except when an "extra" rate is required for climate or war risk,—but they are reduced by dividends the second year, and annually thereafter. One of our members, now of high rank in the Navy, was insured twenty-five years since for $5000, at an annual charge of $118, and although his risk by reason of greater age has been much increased, he now pays but $59 annually,—half of the rate when first insured. The "extra" rate of $5 per $1000 applies only to the West Indies, China, Brazil, and African Stations, and is barely sufficient to cover the increased risk. At other stations there is now no extra charge. Should you desire to make application, WALTER S. MCNAIRY, of the Navy Department, will assist you in preparing the necessary papers.

HENRY AUSTIE,
Secretary.

The especial attention of officers commanding Army Posts is called to the SEED ADVERTISEMENT of D. LANDRETH & SONS, on page three of advertisements in this number of THE UNITED SERVICE.

Officers or others in writing to Advertisers in this Magazine will confer a favor by mentioning The United Service.

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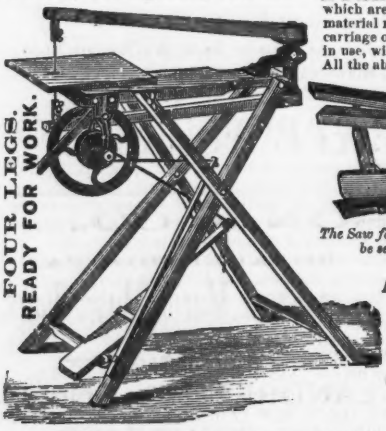

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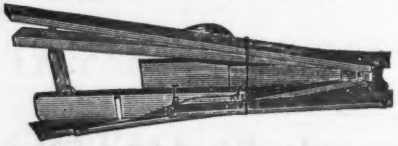

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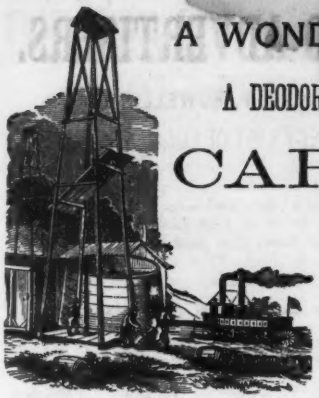

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